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pt. 59



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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

HINGES, HINGE JOINTS, AND
DOOR SPRINGS.

A.D. 1775-1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.



28

LONDON:

PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

PUBLISHED AT THE
OFFICE OF THE COMMISSIONERS OF PATENTS FOR INVENTIONS,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

1878.

176. i. 28.

P R E F A C E.

THE Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embraces several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent, and be supplied in future editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments will be found in chronological order in the "Chronological and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

This series embraces hinges, joints that open and close in the manner of a hinge, and every kind of door spring, or motive power by which doors are opened or closed; the latter subject comprises three important sets of apparatus besides that which acts upon a door to close it by the reaction of a metal spring, namely, descending weights, india-rubber springs, and self-acting apparatus by which gates are opened or closed at fitting times by the approach or departure of the person or thing in motion. Improvements in hinges for mathematical instruments are included, but the combination of scales or pointers with such hinges does not come within the scope of the series. Joints in machinery, such as cup joints, ball-and-socket joints, or universal joints are not included. Joints of spectacles or eye glasses must be sought for in the series devoted to Optical Instruments; for the stretcher joints of umbrellas and joints for umbrella and parasol sticks, *see* "Umbrellas, Parasols, and Walking Sticks," and, for the joints of artificial limbs, *see* "Medicine, Surgery, and Dentistry." If the "closing" of doors, &c., in a Specification, refers

PREFACE.

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only to thereby excluding draughts, dust, &c. from the room to which the door is applied, the Abridgment does not belong to this series.

The Abridgments marked thus (* *) in the following pages were prepared for another series or class, but as they also relate to subjects belonging to the present series, they have been reprinted in this volume.

B. WOODCROFT.

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INTRODUCTION.

THE definition of the word "hinge" is uniformly given as the hook or joint on which a door or gate turns. Its derivation appears to be connected with *hang* and with *angle*, the verb; the corresponding German word is *angel*, and the Dutch *hengzel*. Besides doors and gates, desk flaps, box covers, and lids of various kinds are often made to turn on hinges. The simplest form of hinge is a projection cut upon the substance of which the door is made, and fitted into a hole. This is sometimes done with wooden shutters, and there are examples of stone shutters hinged in this manner. The cathedral of Torcello, near Venice, which dates from the 11th century, still has its windows protected with shutters formed of large slabs of stone hinged on stone pivots.

Perhaps the earliest mention of hinges occurs in the Bible, in I. Kings, chapter 7, verse 50, in relation to the appurtenances to Solomon's Temple, wherein it is stated that the hinges were made of gold, both for the doors of the inner house, the most holy place, and for the doors of the house, to wit, of the Temple. The date that is generally given for the building of Solomon's Temple is about B.C. 1005.

In Pompeii, the doors turned on sockets in the lintels, they being furnished with two umbilici (round and smooth projections) for that purpose. Pompeii was built more than 1000 years before the Christian era, and was destroyed by an eruption of Mount Vesuvius in A.D. 79. Sir William Gell, in his *Pompeiana*, 1832, gives instances of this method of mounting a door.

In the early English, and other styles, dating from about the 10th century, the hinges and other metal work were very elaborate and beautiful in design, and frequently extended over the whole of the doors. In the perpendicular style, hinges were usually very simple in form, the panelling of the woodwork not admitting of much ornamental work.

Hinges are now chiefly made of brass or iron; they are fitted on the edges of the doors and shutters, where they are concealed. The revival of medieval architecture has, however, given an impulse to the manufacture of ornamental metal work, and hinges of varied and good design are in use in Gothic architecture.

Butt hinges are used to hang table leaves, &c., casement hinges for hanging casements upon, dovetails and esses for light doors and lockers. Garnet-cross are for hanging large doors or heavy scuttles in ships. Port-hinges, for hanging ships' ports, and scuttle hinges are particularly adapted for ships' scuttles.

The first hinge that is fully described for folding doors is that set forth in the Specification of John Stedman, No. 1510 of the year 1785.

The earliest spring hinge is that described in the Specification of Henry Downer, No. 1742 of the year 1790. William King, in No. 2318 of the year 1799, describes a hinge that will raise the door over carpets. Ebenezer Palmer, in No. 2412 of the year 1800 describes a hinge applied to merchants' account books. Certain concealed hinges, either stop-hinges or hinges that open by a complete half turn, were protected by the patent, No. 2604, to which the name of Stephen Wells is attached. The hinges treated of in Mr. Thomas Pritty's Specification, No. 2622, A.D. 1802, enable a door to be opened from either jamb.

The above-mentioned are very important inventions, especially in relation to the novelty of the principles involved, and the possible priority which these inventions have over subsequent appliances, but the inventions which raised hinge making from position of a mere routine manufacture to that of a branch of applied engineering science, were those of Redmund, Collinge, and Bates. In No. 4607 of the year 1821, Mr. David Redmund described his hinge serving "the double purpose of a spring to shut the door, and also of a rising hinge, without materially altering the external appearance of the hinge." Collinge's spherical hinges, described in his patent, No. 4617 of the year 1821, are known all over the world. Bates invented wrought iron hinges, in which certain tongues are turned over, so as to form the knuckle joints of the hinge; this invention is described in No. 7185 of the year 1836.

Mr. Morris's swing door hinge is described in the article "*Hinges*" in the *Pantologia* of Good, Gregory, and Bosworth,

dated A.D. 1813. This hinge is applied to those doors which swing open both ways, and it causes the door to shut to, whichever way it is opened. The door is mounted upon vertical pivots at the top and bottom; the top and bottom pivots respectively work in brass sockets. Fixed to the lower pivot is a semi-circular arch, its centre of motion being near the circumference; the arch carries two chains, one pinned to one extremity of the arch, the other to the other extremity, and the free portions of the chains pass in the same direction round a rotatable spring barrel to which their ends are attached. The line of rest of the door is that which joins the centre of the pivot with the point where the chains meet the barrel. The opening of the door in either direction winds one of the chains upon the semi-circular arch, and creates tension in the spring barrel; upon the door being left free, the spring in the spring-box restores the apparatus to a state of equilibrium, and shuts the door. When the door is shut the chains act upon a long lever, but when the door is opened a quarter of a circle, there is but little force acting to shut it, so that it may easily be held open.

In the "Engineers' and Mechanics' Encyclopædia," by Luke Hebert, dated 1836, there is an account of a hinge invented by the author for the express purpose of obviating the inconvenience of opening or shutting outside shutters to windows. In this invention the turn-buckle is superseded, and the use of the hinge alone enables the action of opening the shutter to fasten it flat against the wall. This result is accomplished by means of a semi-circular piece of iron, one extremity of which is rivetted into the centre of the fixed flap of the hinge. A portion of the piece of iron is split to form a spring, and its extremity is turned upwards to form a stop. Upon opening the hinge the flap on the shutter passes over the arc, pressing on the spring, and when arrived at the stop it has passed the spring, and is completely open with the shutter fastened flat against the wall. When it is required to close the shutter, the spring (which is close to the window) is to be pressed down to allow the flap to come back over it; when shut it presents the appearance of an ordinary hinge shut, and with the arc projecting from it.

Mr. Nettlefold's plan of hanging doors to libraries enables the books in the neighbourhood of partitions to be taken out without displacing those adjoining. A brass plate, with two bearing pieces

perpendicular thereto, is screwed to the vertical edge of the partition; these bearing pieces receive the centre pin prolonged from that of a common butt hinge, each flap of which is secured to the edge of a door. In this invention, while one door lays back quite level with the shelves, the other door folds close against the first so as to lie parallel to it and to be quite out of the way.

Whitechurch's hinge enables doors and windows to be opened either on the right or left hand. It is equally applicable to window-sashes, book-cases, and the show-cases of shops; but its advantages will be most conspicuous in packets, steam-boats, and those situations in particular where the utmost convenience in a small compass is the object of study. A pair of peculiarly constructed long double-acting hinges are fixed at the top of the door or window, and in the middle of each vertical side (or near the bottom as it may be most convenient) an auxiliary hinge is fastened. These hinges are so made, and are used in such a manner in connection with a brass bolt fixed on the lower stile of the sash and extending its whole length, that the hinges alternately separate and connect themselves at the joints. When applied to a room door, the bolt or locking bar is situated on the middle stile of the door. Two mortice locks are used, and the door is made to open on the opposite side to that which was last employed by giving an extra half turn to the knob of the lock furthest from the hinge joint to be employed. This hinge is set forth in Specification No. 5129 of the year 1825.

Taft's double-jointed hinge and door spring is described in Appleton's Dictionary of Mechanics, published at New York, in the year 1852. The hinge admits of the opening of the door in either direction, and in combination with it is a spring connected by a chain with the casing, whereby the door is held close to it as well as made to close itself. Each hinge may consist of four or more pieces, two of which are side plates with knuckles attached thereto. The connecting plates with their knuckles are connected by pivots to those of the plates, and each connects the plate to the other, so that when the hinge is opened in the opposite direction, the connecting plate changes sides and folds upon the plate, so that the hinge presents the same appearance in either position.

The following details are given by Mr. F. E. Martineau respecting the manufacture of wrought-iron hinges in *A series of Reports of*

the industrial history of Birmingham and the Midland hardware district, edited by S. Timmins, A.D. 1866. There are three methods of making wrought-iron hinges :—1, the welded hinge in which each flap is made by bending on itself thin iron cut to a suitable form, and uniting the parts brought together by welding, leaving the bend open to receive the pin and make the knuckle ; 2, the “pressed rivetted” wrought-iron hinge is very similar to the welded hinge, but the flap, instead of being made one by welding, is united only by rivets ; 3, the “patent” wrought-iron hinge is made upon an entirely different principle to either of the foregoing. Suitable iron is cut to the figure of the required pattern, having the parts that are to make the knuckle projecting as tongues. These tongues, by being forced lengthwise into properly shaped dies, are curled over in such a way as to make a place to receive the pin upon which the flap is to turn when the hinge is put together.

The same *Series of Reports* furnishes the following information respecting the joints of measuring rules, by J. Rabone, jun. The joints of the earliest made rules were cut from the wooden pieces which formed the legs, and brass plates were attached to the outside to strengthen the otherwise weak and wooden joints. Afterwards the joints were composed of metal, and attached to the wooden sides, instead of being made out of them. The “arch-joint,” which is seen upon so great a number of joiners’ and other rules, was first made about 66 years ago. Messrs. John Rabone and Son, in order to remove the fault of weakness in the joints of all thin rules, invented a joint rivetted upon the surface of the boxwood legs.

Apparatus for enabling doors and gates to open or close automatically have been planned and carried out for amusement by at least one eminent engineer, namely, Mr. John George Appold. The Royal Society’s obituary of this man of original thought and energetic action, gives the following account of his doings in this respect :—“Besides his more important contrivances he made “some for mere amusement ; and every part of his house bore “testimony to the fertility of his imagination and power of invention. Doors were made to open on approach, and to shut “after the person had passed through ; others locked themselves “afterwards. He had contrivances also by which all the shutters “of a room closed by the touch of a spring, and thus, when

“ associated with the regulator of a gas-lamp, caused a change
“ from daylight to gaslight, to the no small amusement of his
“ visitors. All his numerous contrivances acted perfectly, even
“ to the unimportant matter of his self-acting stable-gates, which
“ when once adjusted, were so exact in their mechanism that they
“ remained in use for years without requiring attention.”

The construction of the earlier hinges, for the most part, pertains to the builder's art; the modern hinges, however, involve in their design and manufacture, not only art but mechanical knowledge and engineering science.

HINGES, HINGE JOINTS, AND DOOR SPRINGS.

A.D. 1775, October 3.—No. 1102.

IZON, JOHN, and WHITEHURST, THOMAS.—“A new method
“of casting all sorts of hinges ready jointed, or with false knuckles,
“or joints and pins, in cast iron.”

One side of the hinge is moulded in sand as follows :—The first pattern consists of a cylindrical part attached to the screw plate, pins projecting from the cylindrical part. An impression of this pattern is taken in sand, and false knuckles and false pins, (the said false knuckles corresponding to the knuckles of the remaining side of the hinge) are laid into the cylindrical or joint part of the impression. The metal is poured into the mould thus formed ; when the casting is cold, the pins are drawn and the false knuckles fall out. The side of the hinge thus made is annealed, and the pin hole bored out to the requisite size ; the pin is then fixed into the pin hole.

In moulding the second side of the hinge on to the first side, so as to form a complete hinge ready jointed, when the metal is run into the mould, another pattern is used. This pattern is like the complete hinge, and has the cylindrical portion between the two screw plates. The above-mentioned finished side of the hinge together with its pin, being laid into the mould or impression in sand of the latter pattern, and the metal being run into the mould thus prepared, a hinge ready jointed is formed, and is again annealed to admit of filing.

In making hinges of four joints, it is best to have two false pins which meet in the middle knuckle, so that they can be drawn out easily, and thus made to liberate the false knuckles.

[Printed, 6d. Drawing.]

H.

2 HINGES, HINGE JOINTS, AND DOOR SPRINGS.

A.D. 1785, November 17.—N^o 1510.

STEDMAN, JOHN.—“New sympathetic hinges and quadrants for holding” [folding?] “doors, gates, and shutters, with new invented fastenings for the same.”

The Specification and drawings describe and show sympathetic hinges and quadrants, which “make folding doors, gates, and shutters open and shut both together that is to say by opening and shutting either of the doors the other partakes of the same motion in every respect and opens and shuts at the same instant of time which is done by a communication of hinges over or under the doors.”

According to the first plan, a roller is fixed horizontally on the vertical centre pin hinge of each door; chains, which cross each other and connect the two rollers, are fixed at a sufficient distance apart to prevent them touching or interfering with each other during the movement of the doors. The fixing of each chain to its roller is by a fastening, the position of which on the roller depends upon the amount of opening that the door is required to have.

In a second plan, cross levers communicate the motion from one door to the other underneath the flooring, suitable joints being provided, and the centre pin hinge of either door being the fulcrum of each lever.

Two quadrants (toothed and working into each other) are shown, each fixed on a centre pin hinge; this plan acts well, but occupies space.

In another plan, a wheel on each centre pin hinge actuates a rack in communication crosswise with the other wheel.

“If doors are wanted to be thrown contrary ways the chains or levers must not be crossed and also if doors are wanted to be shut themselves spiral springs may be fixed to the rollers.”

Certain fastenings for doors that open with the said hinges are described and shown.

[Printed, 1s. Drawing. See Rolls Chapel Reports, 6th Report, p. 172.]

A.D. 1786, June 13.—N^o 1547.

MOORE, FRANCIS.—“A new quadrant or quarter circle and standard, which, by being affixed to doors, would, by the help of a line, pullies, and weight, shut the same with more ease

HINGES, HINGE JOINTS, AND DOOR SPRINGS. 3

"and certainty, and with less noise, than had been done by any method hitherto made use of."

The drawings represent three distinct arrangements of the above-mentioned apparatus.

In the first apparatus, the quadrant has a groove on the outside. The line is made fast through a hole, and runs along the groove, then over a "horizontal" pulley and a "vertical" pulley. The horizontal pulley is fastened "under the top part of the door case," and the vertical pulley is "affixed to the side of the door case." When the quadrant is screwed to the inside of the door, near the top, and a sufficient weight is hung at the end of the line, the said weight will "overcome the weight of the door, the resistance of the air and friction," and "will pull the door to and shut it. This first apparatus is "for a door which opens to the right-hand side."

In the second apparatus, a standard supports the before-mentioned pulleys, one at the top, the other at the side.

The third apparatus is "for a door which opens to the left hand." The standard is in the shape of a dolphin, with the head made fast to a foot or plate, which is to be screwed to the door case, so that the standard is nearly horizontal, and stands as far from the base as to permit the quadrant to pass within the pulley "fixed to the back part of the dolphin's tail." The line is fastened to a hole in the groove of the quadrant, and then it passes over a horizontal and over a vertical pulley. When the standard is used, the apparatus is placed "behind the door."

[Printed, 6d. Drawings. See Rolls Chapel Reports, 6th Report, p. 174.]

A.D. 1790, April 13.—N^o 1742.

DOWNER, HENRY.—"A spring for the purpose of shutting a door."

This invention consists "of a spring or springs on a plate, either fixed on or into the door, or jamb or rabbet of the door, and communicating with the edge of the door, or jamb or rabbet of the door, by a chain or hook, or any other method; the spring in the door, or jamb or rabbet of the door, thereby pulling to or shutting the door; and these springs may be made of any shape, and act in various ways, still producing the same effect of shutting the door. The above method applies to doors

4 HINGES, HINGE JOINTS, AND DOOR SPRINGS.

“ already hung, but may also apply to or become part of hinges or joints, so that no other hinges will be wanting. In this case, besides the above described methods, a rack bolt on one side or flap of the joint, with teeth or grooves in it, being forced by a spring, acts on corresponding grooves or projecting teeth on the knuckle of the opposite side of the joint, and thereby closes it, and of course shuts the door. The springs in this case may likewise be of any shape, and act in various directions, either with or without the rack bolt, by means of wheels and chains or hooks, &c. The spring being on one side, and the chain or hook on the other, the same effect may be produced by a weight instead of a spring being fixed in the same situation as above.”

[Printed, 4d. No Drawings. See Rolls Chapel Reports, 6th Report, p. 182.]

A.D. 1792, February 11.—N° 1851.

BARBOR, WILLIAM.—“ Certain machinery for the purpose of hanging of doors and windows or lights in a manner entirely new, particularly those of coaches, chariots, and other carriages.”

The first portion of the “ plan and description ” belonging to this invention relates to carriage windows and shutters and to methods of hanging them.

“ A concealed or secret hinge ” is described and shown. This consists of a flap screwed to the door and another flap screwed to the door post. The first flap is connected with the pin or joint by means of a “ curved or circular arm,” which passes through a hole in the second flap to the joint, which is on an arm projecting inwards from the said second flap and let in to the door post itself. “ When the door is shut the whole hinge will be concealed.” The length of the projecting arm, from the pin to the front of its flap, must be equal to the distance from the pivot hole of the circular arm to the inside of the flap of the said circular arm, so that the flaps may not rub against each other as the hinge moves. The curve of the circular arm and the length of the projecting arm from the pin to its flap must be greater or less according to the size of the pillars to which the hinge is to be fixed, so as to keep the door clear of the mouldings and pillars, the rise of the bow or curve in the circular arm being the same distance from the pin as the pin is from the flap of the said circular arm.

[Printed, 10d. Drawing.]

A.D. 1794, August 13.—N^o 2007. (* *)

SWEETNAM, RICHARD, and HIGGS, JOSEPH. —“ Certain
“ new improvements in the construction of tables, sashes,
“ shutters, and sliding hinges applicable to such shutters, and
“ which improvements may be adapted to other useful purposes.”

The frame of the table is dovetailed and blocked firmly together ; the corners are clamped with metal or veneered with wood, and tapped for a screw or nut for the attachment of the legs. A rib of wood is put across the frame from side to side in a groove, and slides backwards and forwards ; this rib is provided with a screw pin or swivel on which the top leaf is fixed. To the leaf is hinged a flap of equal size, “and turns over on the top of the
“ same with a peculiar hinge, going entirely along the ends of
“ the two leaves,” and having at the end a spring bolt which
“ fastens another table that has a spring ketch fixed to it, firmly
“ together, in form as a sett of dining tables.” By introducing a wedge between the leaves, the table can be used as a writing desk, and within the frame “is concealed every apparatus for
“ shaving, dressing, and writing,” with conveniences for books and packing up the legs. “Concealed spring hinges” are made as follows :—A box of any metal is made with friction rollers on
“ the top and bottom of the casing, which is a bolt or carriage of
“ any kind of metal forced out by means of a spring.” This bolt “is connected by one, two, or more joints to another flap or
“ hinge, to which is fastened the lid or door to be opened, the
“ other part or box let into the article to which belongs the lid
“ or door.” Spring fastenings for hanging sashes are thus described :—“The meeting rail is ploughed out; one of them
“ has a tongue of brass, copper, wood, or any kind of metal,
“ which tongue shoots into the other groove in the meeting rail
“ by means of springs fixed behind the tongue, which when
“ pulled down fastens the window, and is air-tight; the lines are
“ carried in the surfeit by means of pulleys.” Concealed rolling shutters, in various joints, act behind the front linings of windows, or roll up to the surfeits.

[Printed, 4d. No Drawings.]

A.D. 1799, June 17.—N^o 2318.

KING, WILLIAM. — “Joints on improved principles,” and
“ applying the same to tea pots, coffee pots, coffee biggins, tea

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"urns, coffee urns, tea caddies, and every other article that hath a lid or door to it, either in small or large work."

The drawings show a hinge that has three leaves, a central one on a small flap, and two outside ones, into which the joint wire is fixed, on the larger flap; this hinge is fitted for tea pots, and opens to a right angle.

A joint that is suitable for doors, apparently has a curved piece projecting from one plate working into a slot in the other plate. When this joint is used for the purpose of raising the door over carpets, oil cloths, &c., it "is cut on skue," "and lined on the bearing edge with steel or other proper material" moving over "a conical or friction roller beneath the seat of action." The joint is shown without a friction roller and applied to a desk. "This joint is peculiarly adapted to doors which requires no lifting joint to them, and also to all descriptions of household furniture, boxes, chests, writing desks, and any other thing where the same can be applied."

[Printed, *6d.* Drawing. See Repertory of Arts, vol. 13, p. 297.]

A.D. 1800, December 30.—N^o 2412.

PALMER, EBENEZER.—"Improved mode in binding books, especially merchants' account books."

A hinge or chain is applied to the back of the book. The links are composed of small bars of metal, some of which have pivots at each end, and some have holes to be rivetted on the said pivots, each pivot receiving two links, and thereby holding "the said hinge together on the principle of a link chain or hinge."

"There are two holes or more of different sizes, as required in each bar of the hinge or chain, by which means each section of the book is strongly fastened to the same, which hinge, so fastened, operates with the back of the book, when bound, in such an improved manner that thereby occasions the said sections to open in such a manner as to bring them on a parallel with each other, and in consequence thereof admit of the ruled lines being written into even close to the back, without any inconvenience."

[Printed, *4d.* No Drawings. See Repertory of Arts, vol. 14, p. 305; and *Rolls Chapel Reports*, 6th Report, p. 188.]

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A.D. 1802, April 3.—N^o 2604.

WELLS, STEPHEN.—“ Certain new hinges.”

“ The general character of all the said hinges is, that either
“ by a proper bend or configuration of the strap or straps, and
“ the addition of a saddle piece between the joints, or by both
“ the said contrivances, the hinge is made proper and fit to be
“ fixed or let into any door, door-post, lid, or other part of fur-
“ niture, structure, or other thing whatsoever to which it is
“ usual or necessary to apply hinges, in such a manner as that
“ the said hinge, when shut, shall be entirely concealed within
“ the wood or material to which it is affixed, and consequently
“ that it shall not be liable to the great and obvious mischiefs
“ and disadvantages to which other hinges are exposed by being
“ cut, or by the pin being driven out, by which means desks and
“ other places of great importance, closed with common hinges,
“ are rendered accessible to robbery.”

The drawings represent the following applications :—

A hinge with two joints and a strap, applied to a desk.

“ Stop hinges with two joints, so constructed as to open but
“ half way.” Stop hinges with one joint. A hinge for bureaus.
Hinges “ for doors and such other constructions which open by
“ a compleat half-turn.” A hinge that “ shuts into a compleat
“ box,” another that “ has no box,” and a hinge that “ is
“ intermediate in this respect.”

All these hinges have an elbow piece or “ saddle piece.”

[Printed, &c. Drawing.]

A.D. 1802, May 20.—N 2622.

PRITTY, THOMAS.—“ A method or invention of affixing and
“ hanging certain springs, joints and other apparatus to doors,
“ by means whereof such doors may be opened from either
“ jamb.”

The drawings show “ a door hung complete, with dressings.”
On each side is seen “ the projecting knuckle of the hinge, which
“ projecting knuckle is varied so as to stand out more or less, as
“ required for the opening of the door, over the architraves, so
“ that it may open completely back, or one hundred and eighty
“ degrees. In the middle rail of the door is shewn the balls of
“ two latches, which latches are concealed behind a brass or iron
“ plate screwed flush on the door stile, the plate may either be

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"painted or left as an ornament at pleasure. By turning the ball nearer the edge, you mean to open the door; the latch acts as a lever," and raises a "sliding wire" "which is connected with pins," "and raises them out of that of the hinge which is fast on the door, and immediately the door is free to open with the same ease as a common door."

By means of a taper slide, the projection of "a moving knuckle" may be altered, "in case the door should twist or bend." A trigger, connected with the hinge, holds up the sliding wire immediately on opening the door; in shutting the door, the knuckle strikes the trigger, the wire falls, and the pins secure the joints. A rod, mitred at each end (with two notches), resting on two rollers, "moves to secure one side whilst the other is open, to prevent the door from being thrown off the hinges." "Chamber doors hung in this way may be made perfectly secure by small pins passing through the projecting part of the knuckles" to prevent the hinge joint pins being raised up.

[Printed, 10d. Drawings. See Repertory of Arts, vol. 1 (*second series*), p. 321.]

A.D. 1811, May 21.—N^o 3451.

PARSONS, JAMES.—"Hinges and pullies for doors and windows."

"My method for constructing pullies for doors and windows upon a new principle is as follows:—I take in general a spring, according to the strength I want, and confine it in a box, in the same way that the spring in a table clock is confined; by this I gain the power requisite to raise the sash or draw the door; or else I construct my spring so that I need not the box, my invention being y^e applying the power of a spring for the rising of a sash, or drawing of a door, instead of a weight, as is the present mode. I do not specify for any new spring, or new way of giving action to the spring; but my invention is simply, and which I consider new, the application of a spring or springs to raise the sash or draw a door, instead of weights."

The drawings represent a hinge the barrel of which contains a helical spring, a collar being at each end of the spring. The pin has a cap at each end and passes through the barrel and spring. *A roller on a pin at the bottom of the hinge draws down the door,*

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“ instead of a roller on the top, when the door is fastening.” A projection is shown on the outside of the barrel “ to form a rising “ hinge,” also a roller “ for the top of the door to press it down “ and a plate for the roller to work against.”

[Printed, 6d. Drawing. See Rolls Chapel Reports, 8th Report, p. 84.]

A.D. 1814, July 16.—N^o 3822.

SMITH, JOSEPH.—“ Spring hinges for doors and gates.”

A brass shoe, fixed on the bottom of the door, has a centre pin or pivot which passes through a fixed brass plate and is stepped into a socket. A lever, carried by the pivot (the pivot lever) and fixed to it, is furnished with a collar (or brass roller) which is between two levers on two different but concentric fulcra. The upper lever is fixed to a spindle connected with the interior of a spiral spring; the under lever has its fulcrum on a collar connected with the spring box of the said spring. A fixed angular piece, in which is inserted a screw, regulates the distance of the upper and under levers when they are at rest. This invention is adapted for doors that open either one or both ways; when the door opens to the right, the upper lever is forced back by the pivot lever, and “ when opened to its extent, becomes light and easy in “ consequence of the spring having lost a great portion of its “ power, by means of the brass roller ” “ having passed nearly to “ the end ” of the upper lever, thus, by the door opening, the pivot lever “ obtains great power over the spring, and as the door “ closes, the spring regains its former strength.” When the door is opened to the left, the pivot lever forces back the under lever, and the operation has the same effect as before described.

A couple of toothed wheels, eccentrically pivoted, may be used instead of the upper and under levers.

In fixing the door, an upper centre pin or pivot is fitted to the top of the door vertically over the pivot connected with the said brass shoe.

[Printed, 6d. Drawing.]

A.D. 1821, November 9.—N^o 4607.

REDMUND, DAVID.—“ Certain improvements in the construction or manufacture of hinges for doors.”

This invention consists in constructing hinges “ in such a “ manner or form as to make them answer the double purpose of

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“ a spring to shut the door, and also of a rising hinge, without
“ materially altering the external appearance of the hinge.”

This is accomplished by dividing the joint or cylindrical part of the hinge into two parts transversely, and fitting one part (the upper part) with a spindle on which the lower part is free to turn ; inclined planes are formed on each part of the joint, and as, in opening the door, one part slides over the other the door is risen. Above the said inclined planes are horizontal portions, by means of which the door is retained open if opened beyond a certain point. When the door is not heavy enough, or the incline is very flat, a helical spring may be used to compensate for the want of weight or the flatness of the incline. In this case the knuckle of the hinge is covered with a thin brass tube, which projects below the bottom of the hinge ; the spindle projects below the bottom of the tube to receive a brass nut ; the helical spring is introduced round the spindle and inside the tube, and the nut is screwed on and fastened with a pin ; a similar nut is fixed to the top of the hinge.

When the door opens both in and out, double inclines are employed.

[Printed, 10d. Drawings. See London Journal (*Newton's*), vol. 5, p. 178.]

A.D. 1821, November 22.—N° 4617.

COLLIDGE, JOHN.—“ An improvement on hinges.”

1st. Making the bearing or acting surface of one part of the said hinges spherical, “and the other part hemispherical, to “ receive it.”

2nd. The use of a ring, collar, or washer of leather, or any other suitable material, introduced between the upper and lower parts of the said hinges, in order to exclude dust, dirt and wet therefrom.

The construction of this hinge admits of freedom of motion of its upper half “in a universal direction” within certain limits. A hole is made completely through “the spherical bearing or “ ball and upper part or half.” The hinge can thus be oiled at pleasure by taking out the screw which ordinarily covers the upper aperture of the hole. A similar screw placed in the aperture in the lower half the hinge, when removed, allows the foul oil to *run out*. A groove in the spherical part of the hinge serves to *conduct oil* to the upper portion of the said spherical part.

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Ordinarily, gates that shut themselves by their own weight, move upon one or other of two centres, thus producing an obliquity of position in the two parts of the upper hinge. In this case the rim projecting from the upper part of the hinge over the lower or hemispherical part is constructed "so as to allow of a considerable change of position between the upper and lower parts of the said hinge without altering any of its properties."

A butt hinge is described and shown, in which a shank is formed upon the ball, being a part thereof, and serves to unite the ball to the upper half of the hinge by casting.

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 6, p. 246.]

A.D. 1825, March 15.—No 5123.

COLLIDGE, JOHN.—"An improvement or improvements on springs and other apparatus used for closing doors and gates."

Two apparatus are set forth, one suitable for closing ordinary doors, the second available for very heavy doors.

In the first apparatus, the axis on which the door rests or swings, projects downwards beneath the floor into a cast-iron box which contains the acting parts. A double lever or cam is fixed to the said axis, and its two extreme ends or corners "receive an equal pressure from the springs when the door is closed." The springs "are formed similar to the common spring sugar tongs;" a greater length of spring and more extensive range of action is thus obtained "than any other arrangement of the parts would permit, except the common spiral or barrel spring, and which is only used for closing doors one way;" these springs are kept in their respective places by cylindrical studs, between which and the springs small keys are placed. The opening of the door compresses one of the springs, which on being free to act returns the door to its closed position. The direction in which the door is opened (inwards or outwards) determines the spring which acts.

In the second apparatus, the double lever on the axis of the door carries two rollers that bear against one or both of two inclined planes formed on a sliding piece firmly attached to the centre of the free half of a compound elliptical spring. In a state of rest, the action of the inclined planes against the said rollers keeps the heavy door well closed, and when the door is opened

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and set free again the reaction of the said inclined planes against one or other of the rollers returns the door to its closed position.

In each case the door axis has a spherical end which rests in a hemispherical cup.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 12, p. 360; Mechanics' Magazine, vol. 14, p. 392; and Engineers' and Mechanics' Encyclopaedia, vol. 1, p. 675.]

A.D. 1825, March 17.—N° 5129.

WHITECHURCH, RICHARD, and WHITECHURCH, JOHN.

—"An improvement upon hinges (which hinges may be made of iron, steel, brass, or other metals,) for doors, cupboards, and sashes of houses, sashes of book cases and shew cases, and are applicable to all purposes where hinges are used, and particularly to the doors and windows of ships, vessels, and steam boats, and other craft, which will enable the doors and sashes to be opened on the right and left jamb (changing the hinges), and, if required, they can be fitted either with or without a rising hinge."

The hinges are made to separate, "that is, the wing of the hinge affixed to the door to come apart from the hinge affixed to the door post or jamb; it is hence necessary to attach the parts of these hinges to each side of the door, and to each jamb, and to connect the upper hinges upon which the door swings by cross arms, or bars that lead from the hinges on one side to the hinges on the other side, and which bars are respectively brought into action as the door opens to the right or to the left."

"The knuckles or joints of the hinges lock into each other by means of hooks and half cylindrical pieces," "which take hold of the pins or axles," "and thereby link the two together."

Secondary hinges (half hinges and hooks) are attached at the lower or some other convenient part of the door, to enable the door to swing in an erect position. "In order to prevent the door from falling away from the hinges a locking bar is introduced." "This bar may be sliden by hand either to the right or left, but we prefer, in most cases, to connect its action with the knobs of the door locks." By turning the knob of the right-hand lock, the tooth of the sliding bar forms a hinge upon which the door opening to the left will swing; when the knob of the left-hand lock is turned, the tooth of the sliding bar is locked into the

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right-hand jamb, and the door opens to the right, swinging upon the joint of the bar as a hinge.

[Printed, 1s. Drawings. See London Journal (*Newton's*), vol. 10, p. 199; Register of Arts and Sciences, vol. 3, p. 98; and Engineers' and Mechanics' Encyclopædia, vol. 1, p. 677.]

A.D. 1826, January 19.—N° 5322.

COOK, BENJAMIN.—“ Certain improvements in making or constructing hinges of various descriptions.”

The drawings represent a hinge with a “spiral” [helical?] groove concealed in tubes, the said groove being used to produce a rising hinge.

The hinges comprised in this invention may be “made of cast or wrought iron, copper, brass, metal, or mixtures of metals, or of parts of the above combined together.”

A solid or hollow pillar may be soldered into the bottom part of the joint, with an iron or steel pin projecting therefrom, so that it (the pin) may work in the above-mentioned helical groove. This groove is made in a tube over which a plain tube is placed, the tubes and the rising part of the hinge being all connected and fastened together.

The object the inventor has in view “is to produce a rising hinge, in which the opening in the joint and the disagreeable appearance of the wire in it are removed by placing within tubes the mechanism which effects this rising action of the hinge, so that the whole appearance of the hinge is the same, except that when the hinge is open the middle tube” “is rather smaller than the two ends.”

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 14, p. 242.]

A.D. 1826, May 23.—N° 5367.

PARKER, JOHN.—“ Certain improvements on or additions to park or other gates.”

This invention consists “in a rail or carriage way,” called a track, laid under and connected with a gate, and extending beyond it on either side in such manner that when the wheels of a carriage about to pass through the said gate roll on to the said track at one side the weight of the carriage causes the gate to open, while the same weight, when placed on that part of the

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" track which is at the opposite side of the gate, by the passing on of the carriage, causes the gate to shut after it."

The two tracks for the carriage wheels to run upon are respectively designated "the gate track" and "the catch track." Besides these tracks ("cases laid down in the ground with the upper part level with the surface") and the machinery they contain, there are two retaining stops for the gate, and the main catch of the said gate. On the gate track, at a sufficient distance from the gate, there are two plates, each turning in a small arc upon hinges; the first plate, by means of lever mechanism, acts upon the stop, the second, by means of levers and spur wheel gear, opens the gate. On the catch track, a properly-placed hinged plate acts upon levers to release the main catch of the gate. One end of each track is similar to the other.

A two-wheeled carriage entering the tracks releases the stop (which however does no work), then—by means of the plate on the catch track—releases the main catch of the gate and, finally, by means of the second plate on the gate track, opens the gate against the farther stop; after it has passed the gate, it again encounters the second plate on the gate track (which however does no work), the plate on the catch track raises the gate catch (to no purpose), and, finally, the first plate on the gate track releases the stop, and enables the gate to fall into its closed position.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 4 (*third series*), p. 120; and London Journal (*Newton's*), vol. 14, p. 255.]

A.D. 1826, December 22.—N^o 5443.

REDMUND, DAVID.—"Certain improvements in the construction and manufacture of hinges."

The present improvements are more particularly applicable to the rising hinges described in No. 4607 (Old Law).

1st. Separate joint pieces are respectively fixed into the upper and lower knuckles of the hinge. These joint pieces carry on their contiguous faces "two pairs of opposite circular inclined planes."

2nd. Making the back sides of the opposite circular inclined planes with a corresponding inclination to the front or bearing sides, so that the greatest possible portion of the flat ends of the joint pieces may be available to sustain the weight of the door when it is fully raised.

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3rd. The inclined planes are concealed within a socket in the knuckle of the lower leaf. The junction of the knuckle with the leaf is bounded by flat planes, which, if continued, would pass through the axis of the hinge.

4th. To aid in shutting the door, a helical spring is placed inside the centre pin, which is made tubular.

5th. A helical spring within a tubular centre pin is applied to a hinge without any inclined planes. One rising hinge and one spring hinge may be applied to the same door or gate.

6th. In off-standing hinges, the leaves are connected to the knuckles by ornamental distance pieces.

[Printed, 10d. Drawings. See London Journal (*Newton's*), vol. 3 (*second series*), p. 202; *Mechanics' Magazine*, vol. 16, p. 174; and *Engineers' and Mechanics' Encyclopedia*, vol. 1, p. 675.]

A.D. 1833, October 4.—N^o 6477.

SMITH, ANDREW.—“Certain improvements in springs for doors and other purposes.”

These improvements “apply to the construction” [of?] “springs applicable to the closing of doors and casements of windows that open horizontally, or to other situations where such springs may be required, which improvements consist in a peculiar form and novel adaptation of a spring or springs and levers which, when attached to a door or casement, will cause that door or casement to close and remain closed.”

A box or case, containing the said springs and levers, sunk into the floor, receives the lower centre piece or hinge on which the door turns. From the side of the said centre piece an arm extends, having an antifriction roller at its end acting against the internal surface of a pair of bent levers “shaped as callipers,” which levers turn upon “a hinge joint” formed by a pin screwed into the bottom of the box. “These levers are pressed together by one or more circular or crescent-formed springs,” “the ends of the springs bearing with considerable tension against the sides of the levers,” and when the levers are in a quiescent state, and the door is closed, their extremities rest against a stop. On the door being swung open either backwards or forward, the end of the arm acts upon one of the levers and increases the tension of the spring by expanding it; when the door is let go, the spring collapses, one of the levers forces the arm back into its quiescent state and closes the door. By moving

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the door sufficiently far back it will be retained standing open. The springs are without any fixed fulcrum as they are held solely by their tension and pressure upon the levers, every part of the spring therefore operates.

[Printed, 8d. Drawing. See London Journal (*Newton's*), vol. 4 (*conjoined series*), p. 246; and Rolls Chapel Reports, 7th Report, p. 147.]

A.D. 1835, July 24.—N° 6867.

HORNE, THOMAS.—“Certain improvements in the manufacture of hinges.”

This invention consists in “making hinges out of sheet metal peculiarly prepared of unequal thicknesses by means of rolling, drawing, stamping, or swaging, so that the parts which are used to form the knuckles or joints shall be thinner than the parts used to form the flaps or wings of the hinges,” the said thinner parts of the metal being turned over “into a rabbet or against a shoulder.”

A strip of metal is rolled, or otherwise formed, with a groove along the middle, which constitutes the thinner part. The length of the said strip necessary for making one hinge is cut off, and each piece so parted is, by a stamping process, separated into two portions, each portion having thin parts, so related to each other as to constitute the knuckle of the hinge when they are placed together. The thin parts are then bent round by means of a swage, so as to appear like hooks, a straight and cylindrical wire is placed within the hooks as a mandril, and these together are introduced between a pair of dies for the purpose of forcing the hooked parts into a cylindrical form. Other dies force the edges of the hooks into a rabbet, or against a shoulder. The mandril is drawn out, the knuckles cut down, and the pin of the hinge is inserted into the joint of the combined pieces.

Other processes may be employed in which metal of unequal thickness is used, but the foregoing process is preferred.

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 8 (*conjoined series*), p. 226; also Rolls Chapel Reports, 7th Report, p. 165.]

A.D. 1836, May 3.—N° 7080.

HOWELL, WILLIAM AUGUSTUS.—“Certain improvements in the construction of springs for doors.”

This invention “applies both to double and single action door springs;” the former construction is applicable to swing doors,

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the latter to doors that close against a jamb. In each case the action of the spring is to close the door.

The improvements are :—

1st. A combination of double action door springs, consisting of an "excentric or rolling lever mounted on the centre pin of the "door," and a sliding piece carrying an antifriction roller, which is kept constantly pressed against the eccentric by the spring. The spring shown is elliptical. A notch or recess is "cut out of "the excentric at its smaller radius, into which the roller" "fits "when the door is closed."

2nd. A construction of double action door springs in which the power of the spring is opposed to the opening of the door when it is closed, but, when the door is started, the favourable position of the apparatus allows the door to yield easily to the push. This is effected "by snail levers or excentric rollers and chains, which act "upon the spring and present different radii or leverage in "different parts of the movements of the door." A coiled spring is shown in the drawings.

3rd. "Commanding or retarding mechanism" for single action door springs. By means of certain chains and screw wheel gear, connected on the one hand with the spring and on the other hand with a "flyer or expanding governor," the surplus power of the spring, in returning to its quiescent state, is absorbed, and thereby the door is allowed to close gently.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 10 (*continued series*), p. 211; and Rolls Chapel Reports, 7th Report, p. 175.]

A.D. 1836, June 7.—N^o 7109.

YOUNG, JOHN.—"Certain improvements in the making or "manufacturing of metal hinges for doors and other purposes."

According to this invention the said hinges are made with solid knuckle joints, out of peculiarly-shaped strips of rolled, drawn, or swaged metal.

The invention "consists in forming such metal hinges from "out of strips or lengths of metal rolled, drawn, or swaged into "peculiar shapes for forming such hinges, that is, with a rib or "ribs projecting therefrom intended to form the knuckle or hinge "joint, and which strips or lengths of metal are afterwards cut "up or severed by means of proper shaped tools, cutters, or "punches and dies, into the required lengths for forming such

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“ hinges, which portions of the lengths of metal are afterwards,
“ or at the same time cut or properly shaped or formed into the
“ two parts, sides, or rings for forming the said hinges, which
“ parts, sides, or wings afterwards have the hole for the admission
“ of the centre pin drilled through the solid metal or projecting
“ rib intended to form the knuckle or hinge joint, and further
“ are properly fitted into each other, and the screw holes in the
“ wings punched or drilled, and countersunk in the usual manner
“ to form the complete hinge.”

The inventor prefers rolling the above-mentioned strips of metal “with indented or grooved rollers, so as to produce the
“ required forms in preference to any other manner.”

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 11 (*conjoined series*), p. 32; also Rolls Chapel Reports, 7th Report, p. 176.]

A.D. 1836, September 15.—N^o 7185.

BATES, JOSHUA.—(*A communication*).—“ Improved apparatus
“ or machinery for making metal hinges.”

This invention consists of an apparatus or tool for “turning
“ over the tongues or parts of the two sides of the hinge so as
“ to form the knuckle joints.”

A metal foundation plate, bolted to the work bench, has a steel bed furnished with a series of hooked pieces through which a hole is bored to receive the steel pin “which is passed through
“ the whole length of the apparatus, and projects through the
“ ends a sufficient distance to allow of its being withdrawn after
“ each operation of turning over the knuckles.” The outer ends of the bed form hollow axes for the other parts of the apparatus to turn on. Pressers, or bending tools, project from a main plate which has a sliding motion imparted to it by an eccentric worked by a small handle.

The pieces of punched metal being placed in the apparatus, the pressers are made to force the tongues of the metals against the pin; the lever handle is then lifted, so as to cause the whole apparatus to turn (or partially revolve) on the said hollow axes, and thus to bend the tongues round the pin. The pressers are then withdrawn, the pin removed, and the parts of the hinges taken out.

A peculiarity of the invention is that the pressers roll upon the *tongues from heel to point*, and the forward edge of the said *pressers, or bending tools*, closes down upon the edges of the

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tongues and finishes the pressure. This is accomplished by means of bent arms fixed on to the sides of the main plate; pins on the arms work into eccentric grooves fixed to the steel bed.

[Printed, 10d. Drawing. See London Journal (*Newton's*), vol. 11 (*conjoined series*), p. 154; and Rolls Chapel Reports, 7th Report, p. 179.]

A.D. 1837, May 30.—N° 7383.

GERISH, FRANCIS WILLIAM.—“Improvements in the apparatus for closing doors, gates, and shutters.”

The closing the said doors is effected “by the application of a chain (or other suitable connection) and spiral” [helical?] “spring to hinges.” To one flap of the hinge “the chain (or other suitable connection) is made fast by an enlarged head on the part which passes through the flap of the hinge, and in the other flap a passage way or hole is formed to allow the chain to pass freely through when opening or shutting the door.” At the opening of the door the chain compresses the spring; when the door is let go, the reaction of the spring causes the said door to close. The opening of the door may be arranged so as to extend the spring.

The drawings show this invention applied to a common butt hinge; the chain and spring are covered by a tube. For closing swing doors, a spring, rod, and fixed plate are employed; the plate is affixed to the door post, and has a heart-shaped opening formed therein which acts as a guiding surface to a friction roller on the end of the rod. Instead of applying the chain (or any other suitable connection) and spring to hinges, they may be applied to single plates. In one case, a follower is fixed on the door pivot, and moves (in the arc of a circle) a roller on a lever connected (by a rod) with the helical spring. An apparatus (hinge closing) applied to swing doors, consists of two spiral springs, affixed to the spindle of the hinge but coiled in opposite directions; the spring which is not being compressed is prevented from following its catch, on the closing of the door.

[Printed, 1s. 2d. Drawings. See Repertory of Arts, vol. 9 (*new series*) p. 149; and Engineers' and Architects' Journal, vol. 1, p. 156.]

A.D. 1837, December 13.—N° 7506.

VALE, THOMAS.—“Improvements in hinges.”

This invention consists in a mode of constructing hinges whereby and by means of sliding axes and stops, doors, gates, and other

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structures may be taken down and put up with facility without removing the hinges.

The drawings show a door hinge in which levers and springs assist the action of the sliding axes. The projecting ends of the levers become stops for the ends of the axes, when the said axes are in a position for the removal of the door; these stops prevent the axes being pushed separate by the spring, "and in this position they " will remain till the other half of the hinge is forced into its " place, when the levers " will be pushed back and release the " ends of the axes," "and permit of their being pushed away " from each other by their spring," "and thus again combine the " two halves of the hinge." A "riding hinge" according to this plan is shown in the drawings.

Another arrangement of hinge consists of the substitution of a sliding bolt for the above-mentioned levers, and there is but a single sliding axis on the tube, but the sliding axis is constantly pressed on by the spring.

In another arrangement the tubes and spring serve as a bolt to affix the hinge.

A link is used for folding screens to enable them to fold completely together.

A hinge with a sliding bolt is used to affix a rudder on its pintals.

[Printed, 1s. Drawings. See London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 223.]

A.D. 1838, October 25.—N^o 7840.

HENFREY, JOHN. — "Certain improvements in the manufacture of hinges or joints, and in the machinery employed therein."

This invention consists "in so bending a narrow plate or strip " of iron or other suitable substance as to form a strap or bar " having along one of its longitudinal sides a hollow knuckle " adapted to receive the cylindrical pins of hinges, the said strap " or bar being made of sufficient length that it may be afterwards " cut transversely and made into any convenient number of " hinges."

The said plate is first bent in a "preparatory machine." This machine consists of pairs of rollers actuated by a motive power through the medium of certain spur and bevil-wheel gearing.

The first pair of rollers confers on the plate or strip a **V** form with a rounded angle; the second pair converts the **V** form into a **U** form; and by the third pair the free ends are brought together, leaving a loop at the lower part.

The plate is then passed into a "finishing machine," having suitable pairs of rollers to bend it into the ultimate shape of the leaf of a hinge, including a continuous knuckle along one of its longitudinal sides, by three successive gradations. If of iron the plate may be passed through this machine at a welding heat, or a separate pair of welding rollers may be employed. If the metallic hinge is not to be made of iron, the two portions which constitute the strap may be soldered, or otherwise united together, previous to being passed through the machine.

The plate is then sawn into lengths, and in each leaf the gaps are cut, and the holes punched. The pins are then inserted into the knuckle pieces of each pair of leaves so as to form the complete hinge.

[Printed, 1s. 4d. Drawings. See London Journal (*Newton's*), vol. 16 (conjoined series), p. 224.]

A.D. 1839, February 21.—N^o 7976.

SILVESTER, JOHN.—"Certain improvements in the arrangement and construction of apparatus for hanging and closing doors."

This invention "consists in the application of helical springs and antifriction rollers (either separately or in combination) to the joints of hinges, for the purpose of causing them to rise more rapidly on first opening a door (over a carpet, as it were), and likewise of descending with equal rapidity, and thereby effectually closing the door."

In a hinge "intended for a door which has to rise suddenly over a carpet," the flaps are one above the other; the upper flap, and the portion of the socket or knuckle which is attached to it, is secured to the door, the lower flap being secured to the door post. The upper part of the knuckle is a hollow cylinder, in which an axis is inserted; the lower end of the axis is cut in inclined facets, and its central part is cut transversely into a semi-cylindrical groove, which fits over and is supported upon two antifriction rollers that turn upon an axis fixed transversely across the lower limb of the knuckle. On opening the door the axis

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will rise suddenly on to the facets; there is also a sudden descent upon closing the door.

In another rising hinge, a helical spring adds its force to that of the inclined facets. In a modification of this, the middle knuckle of one flap is between the two end knuckles of the other flap.

In a hinge for a double action door, the spring, inclined facets, and roller are made to close the door and not to raise it. In one hinge of this kind, the mechanism is contained within a cylindrical case.

[Printed, 10d. Drawing.]

A.D. 1839, April 3.—N° 8019.

EDWARDS, THOMAS.—“Improvements in the manufacture of “hinges.”

This invention “relates to certain modes of making hinges by “having a stem applied to each socket, and in such manner that “each socket part of any hinge will have its own stem, and consequently its separate means of being fastened.”

In this hinge, a greater or less number of sockets may be used, “the only difference in such case being the length of the pin or “axis passed through the sockets.” Each hollow socket has a stem “with the thread of a screw formed thereon to receive a “nut.” The socket and its stem may be made by casting, or a short piece of tubing may be brazed to the stem. A hinge with a bent stem is described and shown; “the object of bending the “stems is to accommodate the hinges for particular purposes “requiring bending.” “In applying such sockets and stems to “produce hinges, holes are to be drilled into the wood to receive “the stems, and in such cases as the stems will not penetrate “through the wood, there will require to have a lateral hole made “to introduce the nut,” “and after having introduced the nut “the hole may be stopped with a portion of wood to correspond “with the other surface. These description of hinges will be “found particularly useful for writing and dressing cases,” “and “the circumstance of the person having the power of varying the “extent of hinge according to the object required will be found “a considerable advantage.”

[Printed, 6d. Drawing. See London Journal (*Newton's*), vol. 16 (*conjoined series*), p. 228; *Mechanics' Magazine*, vol. 32, p. 51; and *Inventors' Advocate*, vol. 1, p. 130.]

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A.D. 1839, July 20.—N° 8161.

JOHNSTON, DAVID.—(*A communication.*)—"Certain improvements in the manufacture of hinges."

This invention consists "in forcing the eyes through, which the pin or rivet passes to form a hinge by forcing forward the metal of which they are to be made into dies or moulds, which by their shape turn the metal over into the form of eyes as it is forced into the mould."

The stamped plates, with suitable projections which correspond, form together an entire hinge. The projections or tongues are bent "by forcing them end foremost into and against the concavity of the die, by which the tongues conforming to its curve become bent flatwise in their whole length, or so as to bring the ends over to their own surface, or to that of the plate to which they belong." A connecting rod and crank arrangement works the driver in dovetailed grooves to force the hinge forward and to curve the tongues. Previous to this forcing operation, however, a short bend is given to the ends of the tongues to facilitate their passage round the concave surface of the die; to effect this first bending, the tongues are placed on a rest and the downward motion of the short end of a long cam lever carries down the ends of the tongues and thereby suitably bends them.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 13 (*new series*), p. 53; London Journal (*Newton's*), vol. 18 (*conjoined series*), p. 227; Mechanics Magazine, vol. 33, p. 263; and Inventors Advocate, vol. 1, p. 130.]

A.D. 1840, January 21.—N° 8352.

WILKES, SAMUEL.—"Improvements in the manufacture of hinges."

This invention consists in "casting the two sides or flaps and hinge joint thereto at one time on to a suitable axis."

The said axis carries "certain washers or plates which keep the parts of the hinge joint separate, and prevent the melted metal running solid." The washers are thin metallic discs, and they remain as a part of the hinge when the hinge is cast; they are perforated in the centre, and slide tightly on the axis so as to be set at any required distance apart. "The axis and discs thereon are varnished and dusted over with fine burned clay, and are then in a proper state to be put into the mould to receive the melted metal of which the hinge is to be made."

The method of casting these hinges, in moulding-frames of sand,

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is duly set forth. Either one or several hinges may be cast at one time. When the front surface of the hinge is pressed into the frame, iron filling pieces or "chills" may be placed into each of the open joints of the pattern hinge. Where the open joints are large the sand is allowed to form the filling pieces. The mould is placed in a slanting direction to permit the melted metal to be run therein.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 14 (*new series*), p. 201; London Journal (*Newton's*), vol. 18 (*conjoined series*) p. 37; and Inventors' Advocate, vol 3, p. 67.]

A.D. 1840, September 3.—N° 8615.

HORNE, THOMAS.—"Improvements in the manufacture of hinges."

This invention relates to iron hinges, and it consists of three principal parts:—

1st. A method of preparing the strips of iron for hinges, so that the fibres of the metal shall be laid crosswise of the hinge. The metal is cut up so that the fibres are in the direction set forth, and the joints are formed accordingly.

2nd. "The expanding or spreading out of those parts which form the knuckle or joint of hinges which have been previously cut, parted, or separated by means of any description of press and appropriate tools, in order that there may be sufficient width of metal to enable the workman to form a close and neat or perfect joint." The surplus parts of the pressed portion of the knuckle are removed by the workman by punching, or filing, or other means, thereby fitting the two parts together in a proper manner.

3rd. "The operation of previously counter sinking or first preparing the screw holes by means of coned dies," instead of cutting out those parts which admit the heads of the screws in the ordinary way by means of drills. In one method, the screw holes are punched out of the cold metal, and then the said coned dies act upon the metal which is heated for the purpose. According to a second plan, the holes may be punched and countersunk and the knuckle compressed at the same time; the first method is preferred.

No. 6867 is referred to in this Specification.

[Printed, 10d. Drawing. See Repertory of Arts, vol. 16 (*new series*), p. 15; London Journal (*Newton's*), vol. 18 (*conjoined series*), p. 243; Mechanics' Magazine, vol. 34, p. 222; and Inventors' Advocate, vol. 4, p. 165.]

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A.D. 1840, September 7.—N° 8620.

WHITEHOUSE, JOHN, the younger.—“Improvements in the construction of spring hinges and door springs.”

One method of constructing a hinge is as follows:—The spring barrel is a tube with upper and under caps affixed thereto. The axis of the hinge projects through the upper cap, and has a square neck above the said cap, but it (the axis) is simply stepped on to the under cap. One of the flaps is fixed to the caps by means of a square portion thereof; the other flap is free to rotate round the axis as a centre of motion, by being fixed to the before-mentioned square neck of the axis at the top, and by being placed on a cylindrical portion of the under cap. The lower end of the axis has a projecting short axis which carries a small friction roller; this roller acts upon an inclined surface formed on a cylindrical “instrument” or cam, which is hollow and is capable of sliding up and down the axis; the cam is attached by a groove to a feather in the barrel, and a helical spring constantly presses the said cam towards the bottom of the barrel. The opening of the door, by turning the spindle, causes the cam to rise on the axis and compress the spring; when the door is left to itself, the spring presses the cam on the roller, turns the axis, and closes the door.

In one modification of this invention the inclined surface is affixed on the spindle or axis, and the roller slides thereon. In another arrangement of door spring, the frame carrying the roller slides up and down in vertical grooves formed in the spring case; the plate of the door spring, which acts in a similar manner to the flap of a hinge, is screwed to the lower angle of the door. A flat spring may be used. The direct action of the spring is in all cases parallel to the axis of the hinge.

[Printed, 1s. 4d. Drawings. See *Mechanics' Magazine*, vol. 34, p. 224; also *Inventors' Advocate*, vol. 4, p. 164.]

A.D. 1841, February 2.—N° 8828. (* *)

ANDREWS, WILLIAM WARD.—“Improved methods of raising and lowering windows and window blinds, and opening and shutting doors.”

The pin of the left socket of the roller works in bearings in its bracket, and is kept there by a screw pin. The right

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socket has a square mortise cut in it to fit on to and over the square axis of a pinion. Attached to the right socket is a box containing the pinion and a toothed wheel carrying a drum for winding the cord. A metal spring cut ring with a boss on it fits tightly on the axis, and coming into contact with a click holds the roller at whatever height the blind is rolled to. The invention, as it regards doors, is a substitute for hinges. An oil-tight box (to be kept always full of oil) is "let into the floor" under and into the sill of the door and level with the floor; there is a plain cover over the box, and a square pintle, working on a pivot in a conical socket in the bottom of the box, projects from the top. The door is hung on the pintle, a metal plate with a square hole in it being screwed on to the bottom; the pintle passes up a few inches into the bottom cross stile. Near the lower end of the pintle is a pinion which takes into a cogged eccentric furnished with two friction rollers; these act against a cross plate which is kept up to them by two spiral springs, while it keeps its rectangular position with reference to the springs by means of a bottom plate which is formed in one piece with it, and which is kept steady by three pins working through it in slots. The springs are steadied by being coiled round rods which work through the cross plate. A small spring, "to aid in checking the door in its shut position," is acted upon by a stud which forms part of the pintle. A conical socket in a metal plate is let into the top of the door, and a somewhat similar plate into the lintel. This latter plate is provided with a screw plug having a conical end, and capable of being screwed up or down by means of a collar, pierced with holes for a turning lever. In a modification of the lower apparatus a rack is substituted for the eccentric, the spiral springs are both placed on one rod and in a line with each other, a spring and indent replace the spring and stud, and a stud is fixed to the rack on the cross plate.

[Printed, 1s. 6d. Drawings. See *Mechanics' Magazine*, vol. 35, p. 175; also *Inventors' Advocate*, vol. 5, p. 98.]

A.D. 1841, August 4.—N^o 9039.

RATCLIFF, JOSEPH.—(*A communication*).—"Certain improvements in the construction and manufacture of hinges for hanging and closing doors."

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In this hinge, a lever, screwed to the bottom of the door, is acted upon by a spring through intermediate mechanism, the said mechanism being contained in a cast-iron box that is fixed to the floor. The axis of the lever extends into the box, and carries "a segmental plane," "the upper surface of which is "inclined to the axis; so as to make therewith an angle of "about seventy degrees." A broad lever, having at one end two small rollers, turns upon a fixed horizontal axis; two arms immediately above the axis of the lever carry a swivel nut, which is acted upon by the helical spring. The small rollers are thus, by means of the spring, forcibly pressed against the segmental plane.

When the lever is caused to deviate from the central position by the opening of the door, the inclined segment turns upon its axis, one of the rollers is raised, and the swivel nut attached to the vertical arms of the lever compresses the spring. On the release of the door, the pressure of the roller on the segmental plane brings it (the door) back to its closed position. The direction of the opening of the door determines the roller that exerts pressure upon the plane; each direction acting through one roller upon the spring.

An arrangement for enabling the spring to exert more or less force is described and shown. A brass nut working upon a fixed screwed pin can be made to approach towards or recede from the swivel nut, thus enabling the spring to exert greater or less force according to the position of the nut.

[Printed, &c. Drawing. See London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 187; and *Mechanics' Magazine*, vol. 38, p. 142.]

A.D. 1842, March 7.—N° 9285.

FRAMPTON, ROBERT.—"Improvements in the construction of "hinges."

The hinge constructed according to the first part of this invention is "suitable for such cases as require to have the surfaces "of the flaps covered, which are connected together, though they "may be used for connecting flaps or doors where the surfaces "do not require covering." A connecting link connects the flaps of the hinge by means of axes, one axis on each flap.

The second part of the invention "relates to a novel construction of hinge, which will only allow the parts hinged together

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"thereby to move into a right-angle position, or thereabout." Like the above-described hinge, this hinge has its two flaps connected together by a link which moves on axes; the axes are carried by certain projections formed on the hinge flaps. The projections of one flap have grooves, and those of the other flap have pivots, the said pivots sliding in the said grooves when the hinge is being folded. In each of the projections that carry pivots a recess is formed, into which the enlarged projecting end of the connecting link enters.

In the hinge which forms the third part of this invention, the flaps are also used in connection with a connecting link and axes. A projecting plate having a sliding surface is affixed to one of the flaps; the projecting plate of the other flap carries a pivot which rests upon and slides along the said sliding surface when the hinge is being folded. The sliding surface sustains the parts during the action of the hinge.

[Printed, 10d. Drawings. See Record of Patent Inventions, vol. 1, p. 118.]

A.D. 1842, May 24.—N° 9362.

STEWART, JAMES.—"Improvements in hinges for pianofortes
"and other purposes."

"In applying hinges to parts of pianofortes, as well as to some
"other purposes, it is found that the shrinking of the wood
"disarranges the accurate shutting or closing of the parts
"hinged together, and it is desirable to provide some means of
"compensating for the shrinkage of the wood, and my inven-
"tion consists in so forming the bearings of the pins or axes
"of the flaps of hinges (which are to be used in connecting
"parts of a pianoforte or other articles similarly liable to
"derangement by shrinkage), that the pins or axes may slide
"or move in their bearings, and yet be supported thereby, and
"turn therein."

The drawings show a hinge to be used for the cover or lid of a square pianoforte. The pin is fixed in one flap, and the other flap has a slotted or oblong bearing formed thereon. In another hinge, the pin is not "fixed to the flap, but inserted in the usual
"manner;" the case of a cabinet piano fitted with this hinge is shown.

[Printed, 8d. Drawing. See Repertory of Arts, vol. 1 (*enlarged series*),
p. 294; and Record of Patent Inventions, vol. 1, p. 318.]

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A.D. 1842, August 25.—N^o 9454.

REDMUND, DAVID.—“Improvements in hinges or apparatus applicable to suspending or closing doors and gates, and for other purposes.”

This invention relates to :—

1st. “Certain improvements in the construction of cast hinges.”

2nd. “Improvements in the construction of spring hinges.”

Each flap and its knuckle joint-piece—of rising hinges—is constructed of one piece or casting. According to one plan, one flap and its knuckle joint-piece is first cast in sand, and the other flap and its knuckle joint-piece is then cast “on to the previously formed flap.” Another mode is to cast the said hinges “in the closed state.”

Gate hinges are cast with concave backs and ribs. The bearing socket of this kind of hinge is conical, and its pin has a conical stem and a conical top ; the socket may either be “cast complete,” or “cast separately.” An annealing apparatus with corrugated pots (for malleable cast-iron hinges) is described and shown.

Spring hinges are constructed with a compound helical spring round the pin and within the hollow axis of the knuckle joint; caps with ratchet teeth regulate the pressure of the said spring.

In a hinge for a door which opens in either direction, the axis round which the door swings carries a cam with a recess to receive the roller of a pressing lever ; the said pressing lever is constantly pressed against by two springs. When the door is shut the roller is in the recess. In another hinge the axis which carries the door has a cam with two recesses, one on either side thereof, into which friction rollers, carried by levers, enter. Each lever has its helical spring, pressing in a horizontal plane, so that the friction rollers constantly rest against the cam.

[Printed, 2s. Drawings. See Repertory of Arts, vol. 2 (*enlarged series*), p. 26.]

A.D. 1843, March 16.—N^o 9666.

MATCHETT, FREDERICK COOK.—“Certain improvements in the manufacture of hinges.”

1st. “Forming the centres or axes of hinges with flanges or shoulders, so as to admit of the two flaps or sides of such hinges being cast on the said centres or axes at the same time, the flanges or shoulders on such centres or axes preventing the

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“ metal of the two sides or flaps running together during the process of casting.”

2nd. “An improved method of casting hinges.” Those parts of the centres between the flanges “are covered with a thin coating of some glutinous substance, such as varnish or white lead mixed with oil, and are afterwards sprinkled over with fine sand or dust previous to casting the sides or flaps of the hinges thereon.” In casting these hinges the said prepared centres are placed in their proper positions in the mould. The wooden or metal patterns of the flaps and joints of the hinge are placed suitably in the bottom sand box, and the top box is placed thereon in the usual way to obtain a mould of those parts; the patterns are then removed, and the casting is obtained in the ordinary manner. When the hinges are of small size, it is difficult to form the back of the hinge joint with a clear and sharp outline, if a mould of sand only is employed; to obviate this, a metallic piece called a “back mould” is retained in the sand, and shapes the said back of the hinge joint. Certain hollow parts of the “back mould” are filled with sand, so that the joint of the hinge is cast in sand “and the rapid cooling of the metal, which would take place if the whole of the back of the hinge joint were cast in a metal mould, is avoided.”

[Printed, 6d. Drawing.]

A.D. 1845, January 11.—N^o 10,456.

GOLLOP, JOHN.—“Improvements in spring hinges, in spring roller blinds, and in applying springs to easy chairs and carriages.”

The portions of the invention that relate to spring hinges are as follows:—

1st. The knuckles of the hinge enclose a flat helical coiled spring. The central pin passes through the said spring, and “is retained at the top and bottom;” it combines the parts together. A tube, surrounding the lower end of the spring, acts as the axis of the hinge. The ends of the spring bear against studs, one connected with one flap, the other with the other flap, so that the flaps have a tendency to shut together; the position of the upper stud (thence the tension of the spring) is regulated by a notched or toothed cap into which it is fixed, the notches working into similar notches in the upper knuckle. Another

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similar hinge has one of its flaps fixed and the other sliding against the door with a friction wheel.

2nd. A hinge somewhat similar to that described above, except that the torsion of flat springs is used.

3rd. A hinge having a central pin to which the inside ends of spiral springs are attached, their other ends being attached to the barrel of the knuckle joint.

4th. Inclined surfaces on the knuckles, when the hinge is opened, tend to compress a helical spring, and to close the door.

5th. A spring for folding doors.—The case into which the door axis is pivoted contains a flat helical spring surrounding the said axis, a spring barrel and an upper cap. The spring thereby acts, whichever way the door is opened, to close the said door.

[Printed, 1s. 2d. Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 153.]

A.D. 1845, January 11.—N° 10,460.

PERRY, STEPHEN.—“Improvements in the application of
“ springs to locks and other fastenings, to paper holders, to
“ candle lamps, to blinds, window sashes, and doors, and to
“ seats and elastic surfaces for sitting and reclining upon.”

This invention consists in applying springs of vulcanized india-rubber, amongst other purposes to the closing of doors. One end of a strap of vulcanized india-rubber is affixed to a projection on the upper part of the door, “the strap passes into the interior of
“ the lintel over a pulley, and is then at the other end affixed to
“ the door post;” hence when the door is opened the spring will be elongated, “and when released the contracting of the spring
“ will close the door.”

“In those cases where the prepared india rubber above mentioned is required to be perforated for the purpose of fixing it
“ to any other matter,” “care should be observed in forming the
“ holes by cutting out cylindrical portions, or by otherwise avoiding
“ making a slit, and the pins or other instruments put through
“ such holes should be cylindrical, otherwise the prepared india-
“ rubber may, when drawn on and stretched, split,” which the
inventor has “not found it to do when care has been observed as
“ above suggested.”

[Printed, 1s. Drawing.]

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A.D. 1845, April 26.—N^o 10,638.

WILKES, SAMUEL.—“Improvements in the manufacture of “hinges.”

The object of the present invention “is to form the knuckle joints (for hinges) without flaps by casting or otherwise, separately and then having combined them on axes and placed “them in suitable moulds, to cause the flaps to be cast thereto.”

The knuckle joints are composed of short hollow cylinders, each having a slit or opening. These cylinders or separate parts are similar to each other, except that the outer ends of the external joints have no holes for the axis; the other ends of the cylinders for the external joints having holes for the axis; the two ends of each of the other and internal cylinders have holes for the passage of the axis, hence the separate cylinders will, before having the flaps cast thereto, turn freely and separately on the axis. The workman having placed the knuckle joints on an axis, these combined parts are to be put into a mould, the workman taking care that the openings of the knuckle joints are correctly placed in the mould. When the two parts of the mould are combined and the metal run in, it will enter the hollow cylinders and produce a hinge. In some cases, the knuckle joints are made so that the metal of the flaps does not come in contact with the axis when it flows through the slit or opening into the interior of the knuckle joints. “It is not necessary that the knuckle joints should be “of the same metal as the flaps,” “if desired, the flaps may be “covered with thin sheet brass rivetted thereto.”

[Printed, 8d. Drawings. See Repertory of Arts, vol. 6 (*enlarged series*), p. 345; and *Mechanics' Magazine*, vol. 43, p. 415.]

A.D. 1845, November 17.—N^o 10,945.

BOYDELL, JAMES.—“Improvements in the manufacture of “hinges, and of handles for knives and other instruments.”

1st. “A mode of casting iron and brass hinges, the pivots or “axes of the knuckles of the hinges being of one piece with one “of the flaps of a hinge.” In the knuckles of one of the flaps cores are introduced to produce cylindrical recesses for receiving the axes on which the flaps are to move; the other flap, together with the axes, is cast upon the first flap.

2nd. “A mode of casting brass hinges where separate pivots or “axes are applied after the flaps of a hinge are cast.” The two

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flaps "are cast on cones," [cores?] "in order to form the interior of the knuckle joints." The hollow that is cored out extends nearly to the extremity of the outer knuckle. When the pin has been introduced at the other end, and has been forced into its place, it is shut in by the beating down of the extremity of the knuckle.

3rd. "A mode of making cast hinges, casting the flaps of hinges several at one time and in one piece, and then dividing them afterwards." A long casting is shown in the drawings, "suitable to be divided into six hinges." The hinges are sawn apart at certain grooved places.

4th. "Annealing malleable cast-iron hinges in coke fires or ovens." The hinges to be annealed are packed in boxes and then introduced "amongst the coal to be made into coke, by which the hinges will be heated as the process of coking goes on, and they will cool down with the coke, and will be drawn in an annealed state when the coke is drawn or moved."

5th. Making the handles of matchet knives."

[Printed, 6d. Drawing. See Repertory of Arts, vol. 8 (*enlarged series*), p. 6; London Journal (*Newton's*), vol. 28 (*conjoined series*), p. 340; and Engineers' and Architects' Journal, vol. 9, p. 135.]

A.D. 1846, January 12.—N^o 11,031.

CHINNOCK, CHARLES.—"Improvements in the construction and methods of extending and compressing articles of furniture and domestic use, also applicable to cutlery, workmen's tools, windows, blinds, shutters, and similar useful purposes."

The 1st, 2nd, 3rd, 5th, 6th, 9th, and 10th improvements do not relate to subjects that are included in this series of Abridgments. In the 4th, 7th, 8th, and 11th improvements, hinges are mentioned, but no new construction of hinge is described.

12th. "A new construction of a hinge, which by the application of a spiral or worm spring, returns to its closed position the moment the pressure applied to open it is relaxed." This effect is produced "by the compression or expansion of the spring or springs, which are confined in a given space, and can be tightened by a nut when needed." The pin is square, rounded and tapped at both ends. It has a round part in the middle, which carries a cylindrical piece (wedge-shaped at each end) to which one flap is attached. There are two detached wedge-shaped end pieces, each placed on the square part of the pin, to which the other flap or flaps is or are attached. The helical springs are

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placed between the middle cylindrical piece and each of the end pieces. When the hinge is put together, each end of the pin receives a screwed nut; the spring is thus compressed "between the two wedge-shaped pieces of iron and the shoulders of the cylinders."

Other portions of this improvement do not refer to hinges.

13th. Certain articles having hinges; no new construction of hinge is described in relation thereto.

[Printed, 3s. Drawings.]

A.D. 1846, March 25.—N^o 11,149.

SMITH, CHARLES.—"Improvements in cooking and culinary utensils, and methods of heating and suspending or fastening articles of domestic use, and similar purposes."

A part of the tenth division of this invention relates to "modes of forming hinges so as to simultaneously lift and suspend doors with their opening and at their closing, to fit closely to the floor." Each flap of the hinge is formed with a knuckle hinge joint part thereon, one flap being connected with the upper knuckle, the other with the lower knuckle. The spindle which passes through the upper knuckle is fixed to the lower knuckle. A "circular blade" is fixed to the front of one flap, and an aperture is formed in the other flap for the said blade to pass through as the door closes. A friction roller is mounted on the front of the other flap; when the door is closed, this roller passes into a recess in the other flap, but, as the door opens, the "circular blade" travels over the roller, and, by its inclined plane, raises the door. These "hinges are screwed on to the door and jam, as shifting butt hinges are fixed, but with the additional cutting at the back of the hinge to take the bearing blade or plate, and the projecting recess for the friction roller."

The application of hinges and hinge joints to various purposes is mentioned in this lengthy Specification, but no detailed description is given of them; they are applied, to a flap for filling a boiler, to a flap in machines for moulding cements and other plastic materials, together with a spring and a lever, to a pair of tongs, to a potato roaster, and to warming pans, to a combination of a brazier and umbrella stand, to shoes or heaters for warming the feet, to apparatus for holding books, to mashing or pulping machines, to knife and fork cleaning machines, and to carpet bags.

[Printed, 3s. 6d. Drawings. See London Journal (*Newton's*), vol. 29 (*continued series*), p. 356.]

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A.D. 1846, March 25.—N° 11,152.

COTTERILL, EDWIN.—(*Partly a communication.*)—"Certain improvements in articles applied to windows, doors, and shutters."

The portions of this invention that relate to the present series of Abridgments are :—

"An axis for doors, or for windows opening in the manner of doors, in which a bolt pressed by a spring into indentations on the periphery of a wheel on the said axis holds the said doors or windows open at any desired angle."

In arm springs for closing doors, "attaching the arm of the same to a spring box instead of directly to the spring." The roller of the arm rolls and rests on an inclined plane and indentation on the door. The arm (instead of rolling on the door) may be attached to the door, a telescope slide and helical spring allowing the said arm to be lengthened or shortened.

A door spring for closing swinging doors.—The axis of the door is stepped into a case which is let into the floor of the room, and carries a friction roller on the end of an arm fixed to the said axis. A horizontal lever is pressed strongly against the friction roller by a helical spring; the semicircular and inclined end of the lever thereby closes the door when it is left free.

A door spring, instead of the common arm spring, consists of a cylinder and piston attached to a plate on the door, and a link connecting the piston with the knuckle attached to the door case. A helical spring, contained partly in the cylinder and partly in the hollow piston, being compressed by the opening of the door, tends, by its reaction, to close the door. In a modification of this spring, the spring is let into the door case and acts upon a lever, in connection with the door, by means of rollers.

In another door spring, a tape connected with a spring box by means of toothed wheels, coils up the spring which, by its reaction, closes the door.

[Printed, 2s. 2d. Drawings.]

A.D. 1846, May 7.—N° 11,200.

SHEPARD, EDWARD.—"Certain improvements in gates, doors, shutters, and other articles of like construction, and in fastenings to be attached thereto."

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“ Certain additions to gates, doors, shutters, and other articles
“ of like construction, and certain arrangements of machinery or
“ apparatus whereby such gates, doors, shutters, windows, and
“ other like articles may be thrown open and closed, and locked
“ and unlocked, with great facility, and whereby also the said
“ two sets of actions are made dependant and consequential the
“ one upon the other.”

A gate with two leaves, which may be withdrawn into the gateway, is described. On the pulling of a chain, a certain lever, acting through links, lifts up platforms mounted on centres over the gateway. The said platforms have rails along which wheels carrying the leaves run, and the lifting of the platforms lifts the gates and causes them to run down the inclines into their recesses. A reverse action protrudes the leaves and shuts the gates.

Instead of acting upon the lever and links by pulling a chain, the power may be applied thereto “ by means of a platform placed
“ under or near to the gate, and so connected by a chain or other
“ means to the lever or handle,” “ that the weight of the horses
“ or carriage upon the platform shall bear it down, and move the
“ handle; or it may be applied by means of a rail or bar laid
“ across the carriage-way at a short distance from the gate, so
“ that the weight of the carriage in passing the rail or bar shall
“ move the handle.”

Instead of being suspended from framework raised across the roadway, the gates may be supported “ by bearings raised
“ from a framework sunk in the ground, and caused to move
“ backwards and forwards in sunken recesses made for the
“ purpose.”

The same principle as that above described may be applied to gates having a single leaf.

Fastenings applied to these gates are also set forth.

[Printed, 10d. Drawing. See *Mechanics' Magazine*, vol. 48, p. 505; also *Artizan*, vol. 8, p. 114.]

A.D. 1846, May 19.—N^o 11,212.

PERRY, STEPHEN.—“ Certain improvements in the manufacture
“ of rings, straps, bands and bandages, cords and string, and in
“ their application to clockwork, to locks and other fastenings, to
“ presses, to books, to paper holders, to candle lamps, to window

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“sashes, to doors, to window blinds, to seats and surfaces for lying and reclining upon.”

There are fourteen improvements treated of: thirteen of these do not relate to the subject of these Abridgments.

The india-rubber employed in manufacturing the above mentioned articles and applied to the said purposes is that which has been subjected to the processes invented by Mr. Alexander Parkes, [See No. 9807, bearing date in 1843?]. These processes give the india-rubber more permanent elasticity, notwithstanding varying temperatures, and they consist in submitting caoutchouc to the action of chloride of sulphur or other “changing agents.”

The twelfth improvement consists in applying the said preparation of india-rubber “to the closing of doors.” The spring is affixed to a projection on the upper part of the door, “the strap” passes into the interior of the lintel over a pulley, and is then “at the other end affixed to the door post,” hence, when the door is opened, the spring will be elongated, and when released the contracting of the spring will close the door.

[Printed, 2s. 4d. Drawings.]

A.D. 1847, May 22.—N° 11,706.

CHINNOCK, CHARLES.—“Improvements in regulating motion and controlling friction in the joints and other parts of furniture, machinery, and carriages.”

1st. A new construction of a couch.—The end and back are adjusted to the comfort of the sitter by means of the weight of the body, certain helical springs, rods, knuckle joints, and rollers, together with an outer and inner frame, contributing to that effect.

This construction is also applied to recumbent and portable easy chairs, and to drawing room, dining room, and library chairs.

2nd. A combination applied to looking-glasses.—A roller with a slot therein, and a pin hinged in the slot, combined, work in a socket, through the bottom of which the pin passes. The roller has an up-and-down motion controlled by a helical spring secured on the pin by a thumb nut. This arrangement is applied to the pillars of looking glasses, “so made as to have a rotatory motion by means of a movable inner pillar in the pedestal of the glass.

3rd. A new construction of apparatus with music stools.—The height of the seat is regulated by the action of a helical spring

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placed in the hollow of the pillar. The controlling apparatus consists of a cap (fitted to the top of the pillar), lever, spring, pin, rod, and pedal. The pedal obviates the necessity of rising from the stool to adjust its height.

4th. Three combinations of a ball-and-socket joint.—The first, with an apparatus of rod and helical spring, is applied to loo tables. The second, also controlled by a helical spring, is applied to the carriages of guns. The third is applied to the shafts and poles of carriages.

[Printed, 1s. 4d. See Patent Journal, vol. 4, p. 9.]

A.D. 1848, April 20.—N^o 12,129.

BRITTEN, JOHN.—“Certain improvements in heating, lighting, ventilating, and closing and securing the doors of apartments; also in lighting and ventilating carriages; parts of which improvements are applicable to other like purposes.”

The 6th, 7th, 8th, and 9th, parts of this invention relate to door springs.

6th. A “double-action door spring” which may be used “in a trough.” “A curved or irregular incline,” attached to the door, “is made to move backwards and forwards over or under a roller, impelled towards it by means of a spring or weight;” the roller is guided “by means of a radius rod.”

7th. “Various combinations of curved inclines and rollers, in which the one is attached to the door, and the other to the door post.” In one instance, the roller is pressed against the incline (attached to the door) “so that the nearer the door approaches being closed the further the roller recedes from the centre on which the door moves.” In a second instance, the roller “approaches the centre of motion as the door closes.” In a third instance, the curved incline, hinged to the top of the door, is forced upwards against the roller. In a fourth instance, the curved incline, hinged to the door post, is drawn towards it by a spring; the incline partially encloses the roller. In a fifth plan the action of a spring is combined “with that of an ordinary lifting hinge.”

8th. The employment of “the knuckle or knee joint in the construction of door springs.” In one arrangement, a “convolute spring,” attached to the door post, acts (through a jointed rod) upon a bracket attached to the door. In another

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arrangement, "the knuckle is used in the form in which it is " used in the Columbian printing press, and is adapted to an arm " spring ;". a helical spring on the arm acts against the knuckle. The knuckle, in the latter arrangement, may be a chain or cam. When a convolute or spiral spring is used, as in the first arrangement, its tension may be regulated by the adjustment of a crank (attached to its central spindle) upon an indented plate.

9th. Applying arm springs to the opposite side of the door to which they have hitherto been applied, "so that the spring pulls " the door to instead of pushing it." A recess is made at the end of the arm "for the purpose of holding the door open."

[Printed, 8d. Drawing. See Artizan, vol. 7, p. 82; Engineers' and Architects' Journal, vol. 11, p. 370; and Patent Journal, vol. 6, p. 51.]

A.D. 1848, November 2.—N° 12,304.

BROOMAN, RICHARD ARCHIBALD. — (*A communication.*)—
" Certain improvements in the manufacture of hinges, and the
" machinery or apparatus used therein."

These improvements consist in effecting, by means of certain machinery, the operations necessary to the manufacture of hinges, at the same time, or nearly so. The said operations are folding, cutting out, and boring or punching the screw holes.

The apparatus consists of shafting worked by spur and bevil gear from the driving shaft of the machine, one set of shafting being at right angles to the other set. The machinery for advancing the strips of metal out of which the hinges are to be formed, as well as the cutters, punches, pressing tools, wiring, and finishing tools are worked by means of cams and cam rods, the said cutters, punches, and other tools operating upon the pieces of metal (of which the hinge is to be formed) at the centre of the machine. Counterpoise weights, springs, and clips are also used to facilitate the accomplishment of the various processes, the strips (one for each half of the hinge) being cut off and punched for slots at the same time; compressing plates then push the two halves of the hinge through a draw plate till they interlock. A wire is then forced down into the interlocked halves of the hinge, and the hinge is compressed into its complete form, by means of a matrix and a reverse matrix, the wire which forms the axis of the hinge being, at the same time, cut off at the proper length. The hinge falls in a nearly complete state from the machine, "all that

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“ remains to be done being a little dressing with the file. The holes for the screws and rivets may be punched out at the same time as the joints of the hinge itself are being punched out.”

[Printed, 1s. 2d. Drawings. See *Mechanics' Magazine*, vol. 50, p. 385; and *Patent Journal*, vol. 7, p. 130.]

A.D. 1848, December 16.—N° 12,375.

SMITH, EDWARD.—“Improvements in window blinds, and in springs applicable to window blinds, doors, and other like purposes.”

The third part of this invention relates to the application of torsion springs (preferably of vulcanized india-rubber) “to effect the quick raising or lowering of blinds, or the quick opening or shutting of doors, or the quick change of position of any other matters or things similar in their construction and uses.”

The vulcanized india-rubber torsion spring may be square in cross section, or it may consist of a tube, or it may be made up of two strands or cords.

In the application of a torsion spring to the arm spring of a door, the spring box is a tube fixed vertically to the door post. A strip of india-rubber, partially twisted, has one of its ends fixed to the tube; the other end is attached to an upper fixed spindle. The arm which projects from the spring box presses against the door. When the door is opened the spring box is turned, “and the india-rubber inside of it” receives “a still further twist.”

In applying a torsion spring as a double-acting spring to close a door either outwards or inwards, a floor plate carries a vertical pin upon the top of which the door rests by means of a bearing in the upper part of the spring box. The spring box is let into the door and has two thick strips of vulcanized india-rubber securely attached to the bearing (at the top) and to a collar fixed on the pin (at the bottom). When the door is pushed outwards or inwards, the springs are thereby twisted, and their tendency “to resume their normal position causes the door to close.”

[Printed, 10d. Drawing. See *Mechanics' Magazine*, vol. 50, p. 594; and *Patent Journal*, vol. 7, p. 142.]

A.D. 1849, August 1.—N° 12,725.

HARCOURT, DAVID.—“Improvements in vices, and in the manufacture of hinges, and also in apparatus for dressing and finishing articles made of metal.”

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1st. "Improvements in vices."

2nd. "Improvements in the manufacture of hinges." A machine is described and shown in which suitable blanks of the flaps of hinges are successively fed into the machine; the said blanks, "in their progress through the machine have several operations" or processes performed on them, and this without requiring to "be handled between such succeeding processes or operations." Inner and outer frames support a driving axis that carries "the series of pulleys for giving motion to the several driving bands" or cords which give motion to the several parts of the machine." An axis, above the driving axis, and actuated by screw-wheel gear, carries the freely revolving cylinder or wheel, in the six recesses of which, the hinges to be operated upon are fixed; two cams upon this axis "cause the drills used for drilling the holes through the knuckle of the hinges to go in to work." "In order to cut away the metal between the parts forming the knuckles, there are four rotatory cutter axes employed." There are drills on each side of the machine for drilling the pin holes through the hinge joints. Rotary cutters act upon the rounded part of the knuckles.

A machine for dressing and shaping the edges of hinges consists of a frame containing the hinges, that is carried by a travelling bed under the operation of the cutters.

Another machine with countersinking tools and a movable table, finishes the hinges.

3rd. An apparatus for dressing and finishing articles of metal consists of a series of files arranged upon endless belts.

[Printed, 5s. 6d. Drawings. See *Mechanics' Magazine*, vol. 52, p. 120; and *Patent Journal*, vol. 8, p. 248.]

A.D. 1849, December 5.—N^o 12,878.

FISHER, SAMUEL.—"Improvements in railway carriage wheels, axles, buffer and draw springs, and hinges for railway carriage and other doors."

The fourth part of this invention "consists of improvements in hinges for railway carriage and other doors." "The hinge I prefer to be from top to bottom of the door, and it consists of india rubber; that which is called vulcanized india rubber I believe to be the best for the purpose. The india rubber is shut between two plates, both in fixing it to the door and also

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“ in fixing it to the door post, but the mode of fixing such a hinge may be varied.”

The drawings show a door with the above-described hinge. That part of the door frame which is vertical and next the hinge, apparently consists, in its entire height, of two thick metal plates screwed together and between which is a piece of india-rubber of rectangular cross section, which forms the spring of the hinge. The door post is fitted with similar metal plates which, in like manner enclose and hold fast the other portion of the india-rubber strip throughout their whole length. Each plate attached to the door has a cylindrical enlargement which fits into a socket in the corresponding plate of the door post. These cylinders and their sockets extend the whole height of the door and they form the joint of the hinge. When the door is opened in one direction, one joint comes out of its socket and the other turns in its socket. When the door is opened in the opposite direction, the joint that was before out of its socket turns, taking the other joint away from its socket.

[Printed, 10d. Drawings. See Repertory of Arts, vol. 16 (*enlarged series*), p. 15; *Mechanics' Magazine*, vol. 52, p. 477; and *Patent Journal*, vol. 9, p. 118.]

A.D. 1851, March 24.—N° 13,575.

RIDLEY, HENRY STEPHEN, and EDSER, JAMES.—“ A safety hinge, and certain apparatus for the detection of burglars and prevention of burglaries.”

The said safety hinge is attached to doors, shutters, &c., and it consists of two flaps, one carrying a lock and sunk into the style of the door, the other carrying a supplementary flap and sunk into the door post. The supplementary flap or “keeper” turns on the joint of the hinge and falls into a recess in the inner face of its flap. When the lock is properly set, any burglarious entry causes the “keeper” or staple to actuate a chain connected with an alarm apparatus.

One alarm apparatus acts by chains that pull certain levers, the levers being connected with a bell and with the rod of a label that shows the door or shutter burglariously assailed. Another alarm apparatus consists of a train of wheel work acted upon by a spring or a weight which is liberated by the movement of the chain or wire.

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For further security against burglars, the panels and styles of doors, &c., are strengthened by an iron plate in the centre of the said panels and styles.

[Printed, 10d. Drawing. See *Mechanics' Magazine*, vol. 55, p. 261; and *Patent Journal*, vol. 12, p. 15.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 12.—N° 343.

COUCHMAN, JOHN WILLIAM.—(*Provisional protection only.*)
—“The closing and hanging of swing and other doors by means
“ of the spring and pivots.”

“The spring consists of vulcanized india-rubber,” varying in its dimensions proportioned to that of the door. “This is applied
“ by four plates of brass or iron and two screws with shifting
“ heads,” one “plate to act as guide plate, and to be fixed on the
“ edge of the hanging style of the door,” “the other, to which
“ one end of the india rubber is attached, to be secured” to the hanging jamb, “each to be let in flush with the surface of the
“ wood, so that when the door is closed they may be face to face.”
The other plates are arranged in a somewhat similar manner. One pivot is attached on the top of the door, and the other works
“ in a conical-shaped cup fixed to the bottom of the door.”

[Printed, 4d. No Drawings.]

A.D. 1852, October 27.—N° 540.

POTTS, THOMAS.—“Improvements in the manufacture of
“ hinges, and in the machinery for producing the same.”

The principal portions of this invention are :—

1st. “The producing the unequal thickness of the metal of
“ which hinges are to be made by planing.”

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2nd. "Making the barrel or knuckle of hinges by drawing strips of metal through suitable dies at a draw bench;" also certain tools "used for the purpose of cutting out the parts necessary for forming the joints or knuckles of hinges."

3rd. A method "of making hinges out of metal of an equal thickness."

4th. A mode of producing "the bead or projection on the barrel intended to form a stop hinge."

A suitable strip of rolled metal is passed through planing tools attached to and worked by a draw bench; one end thereof is then pointed and drawn through a die, which turns into a semi-circular section or nearly so, the thinner portion of the strip. After annealing and pickling, the strip is passed through a "closing or finishing die." "The strip so drawn is annealed and pickled, stretched at the draw bench to make it straight, and sawn into such lengths as will make the hinge desired." Circular saws then saw through the barrel at proper intervals to form the joint. The piece so sawn is then placed in a die fixed in a fly press which cuts away certain portions of the barrel, and thus fits it for the flap of a hinge.

To make a hinge from metal of an equal thickness, the strip is passed through similar processes to those above described, but the flap is double the thickness of the metal.

To form a stop hinge, a notch in the die shapes a projection or bead on the external portion of the barrel.

[Printed, 10d. Drawings.]

1853.

A.D. 1853, February 3.—N^o 294.

NEWBERY, GEORGE JOHN.—(*A communication.*)—"Improvements in hinges."

"My invention consists in making the sides of hinges of several pieces of wood, metal, or other suitable material, either separately or combined together, instead of forming each side of the hinge of one and the same piece of material, as hitherto practised in the construction of hinges."

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The said compound pieces of wood are cut into the desired shape and size to form a hinge. Cylindrical pieces, turned in a lathe, form the knuckle; segmental pieces are then glued to the said cylindrical pieces, and, pins being passed through holes in them, the hinge is completed. A hinge for a folding screen, made according to this plan, is shown in the drawings.

Wrought-iron hinges are made by passing the iron whilst hot between steel rollers of the shape of the parts to be formed, after which they are divided into lengths, and holes are formed therein. The centre or barrel is affixed to the flap by brazing or screwing.

Another mode of constructing metal hinges is to cast the pieces in six feet lengths, shaping the flaps in a planing machine, and turning the portions intended for the barrel in a lathe.

Instead of making the joints of the hinge "square" to its face, such parts may "be formed bevil" "so as to make it a rising hinge."

[Printed, 8d. Drawings.]

A.D. 1853, February 23.—Nº 462.

ENGERT, ADAM CYRUS.—(*A communication from Alexander Porecky.*)—"Improvements in joints for the sticks of parasols and other like purposes."

"My improvements consist in manufacturing a spring joint.
"I take a piece of steel or other metal, and bend it up in the
"form of a tube; or I take metal tube, and make a slit along
"its whole length. I widen this slit by introducing what I
"term cheek or side pieces. This spring tube forms the centre
"part of my joint. At each end I introduce through the slit the
"flattened end of a socket, ferrule, or tube, and retain it between
"the cheek pieces by a pin or stud, which however does not
"transverse the central part of the joint. The cheek or side
"pieces are retained within the spring slit tube by a stud or pin.
"One socket carries the handle of the parasol stick, and the other
"the top of the stick."

The flattened parts of the sockets have grooves at each side, into which the edges of the tubular spring fall, so as to keep the joint stiff when the parasol is not required to be folded. The outer edges of the flattened parts taper slightly to enable the joint to be more easily folded. "The folding is effected by turn-

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"ing the sockets by means of the parts of the stick inserted in them so as to bring these parts parallel to each other, or at any intermediate angle, in which position they will be retained by the spring."

[Printed, 6d. Drawing.]

A.D. 1853, June 15.—N^o 1453.

DILKES, JAMES, and TURNER, EDWARD.—"Improvements in door springs."

"This invention consists of employing helical springs made of iron wire or of brass or steel in combination with inclined surfaces; such inclined surfaces are moved by the act of opening the doors (to which such apparatus may be applied) by means of levers or instruments attached to the doors, such levers or instruments having each a roller or rollers which move against the inclined surfaces. The movement of the inclined surfaces causes the springs to be extended or moved from their quiescent positions; the effort of the springs will thus at all times have a tendency to close the doors, and also to keep them closed, though the doors may at pleasure be retained open."

In one apparatus, suitable for a door which may open in either direction, the axis of the door is stepped on to the bottom of a box "let into the sill." Lever arms on the said axis carry friction rollers, one or other of which, when the door is opened, act on the inclined surface of a slide. A series of helical springs are affixed by their extremities to one end of the slide, the other extremities of the said springs being affixed to a plate which is retained at the end of the box. When the door is opened to its widest extent it is retained open by a recess formed on the slide.

Another apparatus, similar to the above, is suitable for a door opening in one direction only.

An apparatus, applied to the side of a door, consists of an inclined surface carried by a slide, and attached to one extremity of a series of helical springs by means of a rod. When the door is opened a roller fixed on the door post raises the slide and distends the springs, which, as soon as the door is let go, react to shut it.

[Printed, 1s. Drawings.]

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A.D. 1853, July 29.—N° 1777. (* *)

NEWTON, WILLIAM EDWARD.—(*A communication.*)—"Im-
provements in depositing metals or alloys of metals."

This invention relates to the solutions used for metallic deposition either by immersion or "by galvanic agency."

To electro-deposit brass the double salts of the metals (copper and zinc) and an alkaline base are used; the following are mentioned, the chloride, acetate, carbonate (with ammonium as a base), and tartrate (with acid "hydrochlorate of ammonia"); also a solution of the citrate of copper and of zinc in citric acid, or of the tartrate of these metals in potash or soda, may be used.

For depositing copper on iron by immersion or by the battery, a solution of acetate of copper in acid "hydrochlorate of ammonia," or of citrate of copper in citric acid, may be used.

For bronzing by galvanic agency, a solution of the double tartrates of the elementary metals (copper and tin) and potash may be used; for an alloy of zinc, tin, and copper, the double cyanide of copper and potassium in combination with zincate of potash and stannate of potash, or the double tartrate of the metals and potash, may be used.

The following solutions may be used for electro-brassing:—A salt of copper in cyanide of potassium in combination with a salt of zinc in ammonia, or the inverse combination.

For electro-bronzing, a solution of salt of copper in cyanide of potassium and of protochloride of tin in potash may be used.

Another part of the invention consists in electro-depositing an alloy of zinc and manganese from a solution containing chloride of sodium, sulphate of zinc, and chloride of manganese; or sulphate of manganese, with "sulphate or hydrochlorate of ammonia" or chloride of potassium, and chloride of zinc, may be used.

This invention also consists "in obtaining great thickness of coating by depositing successive layers of metals or alloys." The following metals may be successfully applied:—Zinc, lead, tin, nickel, cobalt, copper, palladium, and "platina;" also the following alloys, copper and zinc, copper and tin, zinc and manganese, and copper zinc and tin. The same result may be attained by depositing alternately or successively from different solutions of the same metal or alloy.

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Among the articles to which the process may be applied are mentioned hinges.

[Printed, 4d. No Drawings.]

A.D. 1853, August 20.—N^o 1944.

KIMBERLEY, JAMES.—“An improvement or improvements in
“ raising and lowering various kinds of window blinds, and in
“ opening and closing window and other curtains; applicable
“ also to the raising and lowering or winding and unwinding of
“ maps and other sheets or articles, and to the closing of
“ doors.”

A cord of vulcanized india rubber is placed “in a tube running
“ along the top of the door frame,” and is fastened thereto, by
one end, above the hinge of the door. The loose end of the cord
passes over a pulley, fixed at the other extremity of the top of the
door frame, and is connected with the door; “the contraction of
“ the said elastic cord tends to close the door when it is open.”
By making the said cord work between two pulleys, both pulleys
being in a horizontal plane, “the said elastic cord may be made
“ to close a door opening in both directions.”

[Printed, 8d. Drawings.]

A.D. 1853, August 25.—N^o 1976.

TOMPSON, ALFRED BECK.—(*A communication.*)—“A new or
“ improved spring door hinge.”

This invention consists of “a spring door hinge containing two
“ springs, one of which said springs is brought into operation
“ when the door is opened in one direction, and tends to close the
“ said door, and the other of which said springs is brought into
“ operation when the door is opened in the other direction, and
“ tends to close the said door.”

The steel springs are coiled in opposite directions; they are
spiral springs. The inner end of each is connected with the pin
or axis, and the outer end to the chamber constituting the joint.
Pins or stops in connection with the axis of the hinge enable the
springs to act as above indicated.

“It is desirable to have a bead running down the hinged side
“ of the door of a size equal to that of the joint of the hinge, and
“ in which the said joint is inserted.”

[Printed, 8d. Drawings.]

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A.D. 1853, October 14.—N^o 2365.

BROMHEAD, SAMUEL.—(*Provisional protection only.*)—"Improvements in emigrants' and other portable houses and erections, and hinges of metal for all purposes requiring hinges."

"Metal fastenings to be fixed to the ends of wood plates upright, and all other parts which have to be connected with each other by dove-tails and stirrs of different forms, and metal plates, all previously fixed and fitted, and requiring no addition in the fixing and putting up; also stirrs and plates to the external sheeting of iron; also hinges that may be used for any purpose requiring hinges, enabling any person to unhang a door or window, and hang them up, without a mechanic or any tool, equally secure for opening and shutting, so that the door or window may be taken off for repairs and painting in five minutes or less, which hinges to be dovetailed or socketed, so as to have the door removed or lifted from the hinges without unscrewing, leaving the entire hinges upon the hanging style or doorpost."

[Printed, 4d. No Drawings.]

1854.

A.D. 1854, February 14.—N^o 361.

O'CONNOR, PATRICK.—"An improved lever hinge for suspending and closing doors and gates."

This invention "consists in the use of a weighted lever, applied in the manner herein-after described, for the purpose of closing doors or gates, and of retaining them open when the door or gate is thrown back and is at right angles to the framing."

In one arrangement of the lever hinge, the lower spindle or pivot of the door is stepped on to the bottom of a metal box, the brass cover of which is flush with the floor. The lower part of the spindle is fitted with a cam, which, by the opening of the door, actuates a friction roller whose axis is rivetted to a slide. The said slide traverses to and fro in grooves in the bottom of the box and works a short lever, the axis of which is supported by cheek plates projecting underneath the bottom of the box. The

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axis of the short lever also carries an arm having a pin at its extremity against which the short end of the weighted lever rests. When the door is opened, the cam moves the roller and slide, and thus, by means of the intermediate levers, raises the weighted lever. If the door is full open, a projection on the cam prevents the weighted lever from descending and the door from shutting, until it is slightly pushed to, when the weighted lever exerts its force and closes the door.

In another similar apparatus, friction rollers on the spindle act against the curved tail of the weighted lever, and thus enable the opening of the door to raise the weighted arm, which, when the door is not wide open and is let go, descends and closes the door.

[Printed, *sd.* Drawing.]

A.D. 1854, April 29.—N° 967.

DIXON, BENJAMIN.—“An improvement or improvements in “the joints of measuring rules.”

This invention “consists in making the joints of measuring “rules from sheet metal, cut and bent in the manner herein-after “described, instead of making the same of plates of cast or “unbent sheet metal, as is usually practised.”

According to one method, the joint is made up of a “side” or flap only, a circular part with the other flap (in one piece), and a centre piece rivetted to the “side.” Each of these pieces of sheet metal is “cut by a press or otherwise.” The side is cut of such a shape that when bent over, along its longitudinal centre line so that the bent portions are parallel to each other, the piece forms a hollow into which the centre piece is rivetted. The circular part with the other flap is similarly cut and bent; the circular head of the centre piece being introduced between the circular and parallel parts and an axis “being passed through the two sides of the “joint and rivetted, the said joint is complete.”

According to a second plan, both sides of the joint of the rule are formed by folding up pieces of sheet metal of the same shape, that shape being like the aforesaid circular part with a flap. The two circular parts of one of these pieces are brought together and rivetted to form the circular head, which is introduced between the circular and parallel parts of the other piece; an axis joins together the two sides. This plan is not described in the *Provisional Specification*.

[Printed, *sd.* Drawings.]

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A.D. 1854, May 2.—N° 990.

BISHOP, BENJAMIN, and DYER, JOSEPH.—“Improvements in
“the manufacture of stop-butts and other hinges.”

These improvements “refer entirely to hinges made of sheet
“metal or iron.”

1st. The treatment of the metal from which hinges are to be made.—The thickness of the metal is reduced at that part of the hinge which wraps round the centre pin and forms the knuckle ; this is done by cutting out a strip of metal of suitable width, and passing it between a pair of rolls, at the same time reducing the part which forms the knuckle. The intermediate portions of the flattened part are reduced to a mere film ; when this film is removed and the pieces are divided and out, they fit, one into the other, to form the knuckle. For these purposes, instead of rolls, a fly-press may be used.

2nd. “Cutting out and forming the hinges.”—This part of the invention relates more particularly to “stop hinges.”

The flap of a hinge, having the same thickness of metal round the knuckle as on the flap, is placed between the top and bed tools of a fly press. In the hollow of the bed tool there is a projection, which, as the two tools are brought together by the force of the press screw, forms the stop of the hinge. Stops are made in both knuckles.

In another plan, the flaps are of sufficient width to be bent over, to form the stops and to thicken the flaps ; the knuckles and flaps of these hinges may be soldered.

3rd. “The mode of finishing the hinges.”—This is effected by
“passing them lengthways between rolls, suitably formed on
“their faces.”

[Printed, 10d. Drawings.]

A.D. 1854, July 14.—N° 1547.

SEWELL, CHARLES.—“An improvement in spring hinges for
“doors and gates.”

This improvement “consists in employing as a spring for such
“hinges a rod of steel or other suitable material, which passes
“through the center or axis of both hinges, and is fastened at
“the upper end into that part of the upper hinge which is
“attached to the door-post or the soffit, and at the lower end to
“that part of the lower hinge which is attached to the door, and

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“ the torsion of this rod in opening the door effects the recoil or
“ closing of the door.”

The drawings represent the application of the invention to a pair of “ butt hinges,” attached to a door. The steel torsion rod is keyed at the upper end to the leaf of the upper hinge which is fastened to the jamb, and at the lower end to the leaf of the lower hinge which is attached to the door. “The rod might be prolonged downwards, so as to form the lower center to work in “ the lower leaf of the hinge;” but the inventor prefers employing a separate pin for that purpose. A tube or casing, attached to the door, encloses and conceals the torsion rod.

The invention is also shown applied “to a pair of hinges for a “ double swing door.” A collar passes through the lower portion of the upper hinge, and is keyed to the upper half of the upper hinge which is let into the soffit; the upper end of the torsion rod is secured to this collar. The lower end of the torsion rod is keyed into a pivot which is keyed into the flap or plate of the lower hinge. The pivot socket is let into the floor. A groove “ is cut in the circular edge of the door to receive the torsion rod, “ and the spare space is filled in with a fillet.”

[Printed, 1s. Drawings.]

A.D. 1854, July 31.—N^o 1685.

GREEN, HENRY.—(*Letters Patent void for want of Final Specification.*)—“ Improved apparatus applicable to the hanging
“ of doors, gates, and windows, and for closing or holding open
“ the same when required.”

“ In applying this invention to doors, windows, or gates, it is
“ proposed to mount them on gudgeons or pivots, working in suitable bearings fixed above and below the door, window, or gate;
“ on the back of one of the gudgeons or pivots there is a short
“ stud, which acts as the axle for a small friction roller, which
“ roller works upon and against an inclined plane, which is
“ formed on the end of a weighted lever. By this arrangement
“ it will be seen that if the pivot is turned, the friction roller will
“ travel upon the inclined plane, and as it (the friction roller)
“ does not rise, it will depress that end of the lever and raise the
“ reverse end thereof, upon which the weight is placed. Upon
“ the lever being freed from external pressure, the inclined plane
“ pressing against the edge of the friction roller will cause it to
“ roll to the bottom of the inclined plane, and consequently close

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“ the door, window, or gate to which it may be connected. At
“ the top of the inclined planes (or plane as the case may be,)
“ there are notches formed, so that the friction roller, falling
“ therein will remain stationary and hold open the door, window,
“ or gate to which it is attached, until it (the roller) is forced out
“ of the recess by external aid, upon which the door, window, or
“ gate to which it may be connected will immediately close.”

In the drawings, a stop is shown, fixed on the floor, which can be so turned as to prevent the friction roller falling into the notches when the door is not required to remain open.

[Printed, 8d. Drawing.]

A.D. 1854, December 26.—N^o 2722.

BISHOP, BENJAMIN, and DYER, JOSEPH.—“Improvements
“ in the manufacture of hinges.”

This invention “consists in casting brass, malleable iron, or
“ other metal hinges with their joint or knuckle parts open,”
and in this condition the flap parts are planished or flattened,
“ and the parts forming the knuckle are then bent into a cir-
“ cular form by suitable tools ready to receive the axis on which
“ the hinge is to work;” but before they are put together the
joints are cleared out “by means of suitable cutters working
“ in a common lathe.” By this means the inventors “insure an
“ accurate fit of the one part in the other, in which state they
“ are ready to be secured by the centre pin, and to be finished
“ in the usual way, either by the file or other suitable cutting
“ surfaces.”

The two corresponding parts of a hinge, of cast brass, are
cleaned, pickled, and flattened by means of a stamping tool, con-
sisting of a “bed tool” and a “hammer.” The joint of the flap
is annealed and the knuckle is caused “to assume a circular
“ shape” by means of a top and bed tool worked by a fly press.
The joint is then prepared and cleaned out by means of a steel
cutter, or series of cutters, fixed in a lathe and caused to revolve
rapidly, the flap being laid upon a suitable rest. The hinge is
then ready to receive its centre pin and to be finished.

This principle of manufacture is equally applicable to “stop
“ butt” hinges.

[Printed, 8d. Drawing.]

1855.

A.D. 1855, January 29.—N° 220.

COLLINGE, ARTHUR.—“Improvements in spring hinges.”

A hinge that causes a door swinging both ways to return to its closed position “consists of a top centre and a bottom shoe “ and spring box.” The top centre consists of a pin fixed to the upper part of the door frame and fitting in a socket attached to the door. “The bottom shoe is attached to the lower part of the “ door, and fits tightly on a square-ended pin, which forms the “ centre spindle of the spring box, and rotates with the door.” “ The spring box is sunk in the threshold, the square end of the “ centre spindle only projecting upwards into the shoe.” A projecting arm slides horizontally in a hole in the centre spindle and carries, at its extremity, a roller that is compressed by a helical spring against the interior surface of the box which is heart-shaped, the fixed position of the arm, corresponding to the closed position of the door. The fixed position of the arm takes place when the roller is at the meeting of the two opposite curves of the heart-shaped interior surface; at any other position, the arm and consequently the door tends to return to this fixed position.

In the Final Specification a double or sympathetic spring hinge is described; this is applied to “folding doors, each leaf of which “ is required to move on pressure being applied to one of them.” In a covered box fixed in the threshold of the folding doors, the two door pivots project downwards; each pivot carries a roller to which is fixed a flexible strap; each strap is connected to one of two semi-cylindrical bars, situated lengthwise of the box, and working against each other within the limits of a collar on the one hand and the resistance of a helical spring on the other hand. The motion of one door is thus communicated to the other, and the action of the helical spring on the bars restores them to their closed position.

[Printed, 10d. Drawing.]

A.D. 1855, February 7.—N° 296. (* *)

HARTFIELD, WILLIAM.—“Making book covers in tortoise-shell, inlaid or not with pearl or ivory,” also “improvements “ in machinery for embossing, carving, and inlaying book covers

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“with pearl and ivory,” also “making metal joints, by which
“such books may be widely opened; the said improvements to
“be applicable to inlaying pianofortes.”

The book covers are made of tortoiseshell or of wood veneered with tortoiseshell; the shell is either plain or inlaid with pearl, ivory, or other substance in use for inlaying. The backs are of leather or velvet. The joints of the covers are of metal “drawn through a draw plate,” “whereby,” says the patentee, “I attain greater strength and durability, and a joint admitting the two leaves opening back one upon the other.”

In stamping tortoiseshell so as to make it assume the required form, dies of iron are employed; they are shaped concave and convex and engraved with a suitable device; they are “worked by a press in the ordinary manner.”

[Printed, 4d. No Drawings.]

A.D. 1855, March 10.—N^o 545.

BELLFORD, AUGUSTE EDOUARD LORADOUX.—(*A communication*).—“Improvements in machinery for making butt hinges of wrought iron or other metal complete at one operation.”

This invention “relates to the novel construction, arrangements, and combinations of certain mechanical devices and appliances for punching, bending, and cutting metal to form two parts of a hinge, fitting them together, inserting a pin, closing the joint, and for carrying them from one to another of the successive stages of manufacture.”

“Two bars or strips of metal of a proper thickness, and of a width equal to the length of the hinge, are fed into the machine at opposite sides in the same line, and as they approach each other have the requisite holes and notches cut by punches, and are bent by suitable mechanism to partly form the joint, and afterwards advanced until they enter between and embrace each other. The partly formed hinge is then cut off from the strips and moved away in a direction laterally to the movement of the strips to the place where they receive a pin, a little longer than the width of the hinge, and which is driven in by coming in contact with a stationary excentric curved piece; the then partly formed joint is closed and the hinge completed.”

The punches are worked by levers in connection with eccentrics on the main shaft of the machine. The bending rollers are used in connection with sectors and other toothed wheels to impart

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the requisite half revolution to them at the proper time. The cutters are worked by the quick movement of a cam, and feeding clamps, worked by cam levers, insert the wire into the partly formed joint. The closing of the joint is effected by means of the die of a press.

The machine can also make double plate hinges.

[Printed, 1s. Drawing.]

A.D. 1855, March 19.—N^o 616.

HODGES, RICHARD EDWARD, and MURRAY, CHARLES.—
“Improvements in door springs.”

When a door is to open in one direction only, a lever is fixed on the door; “a short chain, strap, or cord is attached at one of its ends to the door frame, and at its other end to the outer part of the lever.” To the same end of the lever is also attached a spring (preferably of vulcanized india-rubber), “and the other end of the spring is attached to the door.” The spring is strongest at the closing of the door.

“When the door is arranged to open in two directions, then two levers and two springs are used; one of which levers comes into action when the door is opened in one direction, and the other lever comes into action when the door is opened in the other direction. To the outer end of each lever is attached a spring, by preference of vulcanized india-rubber, and the other ends of these springs are attached to the frame of the door. The door has affixed to it a plate with a sliding bolt, which is to form the upper axis of the door.” “On the frame of the door is fixed a plate with an opening or bearing to receive the end of the sliding bolt or axis of the upper end of the door. On the axis are placed the two levers, which are formed with projections or stops, which rest against the plate fixed on the door frame, and also against the plate on the top of the door when the door is closed; but when the door is opened, one lever by its stop rests against the plate at the top of the door, and the other lever by its stop rests against the plate fixed to the frame of the door.”

[Printed, 10d. Drawing.]

A.D. 1855, May 31.—N^o 1242.

RIMINGTON, WILLIAM, junr.—(*Provisional protection only.*)—
“A new spring hinge for swing doors.”

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"The means which I employ for effecting the objects of this invention are as follows:—I employ the levers of the third order, each acting upon a powerful tempered steel spring. To the aforesaid levers hooked pieces are connected and placed in opposite directions with respect to each other; said hooked pieces embrace a pin fixed into a wrought-iron arm or lever fixed to or formed upon the pivot upon which the hinge turns or moves in a step, said arm being enclosed in a box with the other mechanism, and covered with a lid. The part to which the door is to be affixed is securely attached to the pivot of the hinge in the manner usually practised. I also employ set screws for increasing and diminishing the power of the springs when necessary, and other set screws for adjusting the doors to the required position when closed."

"By the above novel arrangement of mechanism the pressure of the springs is at its maximum when the doors are closed, by which they are securely held and prevented from being easily blown open, as heretofore, and the pressure of said springs is at its minimum when the doors are wide open, by which they may be easily kept open if required."

[Printed, 4d. No Drawings.]

A.D. 1855, June 20,—N^o 1412.

SAVAGE, ROBERT WATSON.—"Improvements in single and double action swing doors."

An annular inclined plane or wedge in conjunction with springs, and with rising hinges, in the case of single action swing doors, tend to close the door except when it rests on the level part at the top of the incline.

"Close to the edge of the door, nearest its turning point, and secured underneath the same so as to allow the door to travel on it, I have an inclined plane or wedge piece, the surface whereof must be such as to compass the curved course taken by the opening, shutting, or swinging of the door, and which inclined plane or wedge piece must be secured in such position underneath the door that the curve might be described thereon, and so that the door on being opened shall press first upon the lower part or thin end of the inclined plane or wedge, and then travel on to the highest or thick part thereof." The said inclined plane may be fixed above the door; and it is "supported

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" at the highest part of the incline by a spring or springs, giving
" an upright action. Single-action swing doors, which shut and
" open only, but do not swing backwards and forwards, must be
" hung upon lifting hinges, as the door rises up the inclined
" plane in opening, and runs down it in shutting; in all cases
" the doors should be provided with rollers to travel over the
" surface of the incline." " For double-action doors the place of
" the hinges is supplied by two lifting bolts, which form the
" centres, and allow the door to be hung and unhung when re-
" quisite;" also " a concaved notch or dip is provided midway in
" the lower part of the inclined plane, where the door will be
" retained when closed until opened."

[Printed, 4d. No Drawings.]

A.D. 1855, August 25.—N° 1924.

EVERY, JOHN.—(*A communication.*)—"Automatic attachments
" to be applied to gates and doors."

By means of this invention " a gate or door may be opened or
" closed by merely operating a lever at either end of the gate or
" door."

A rectangular box, sunk a certain depth in the earth, and
containing a winding shaft, a pulley, and a descending weight,
is placed near the gate. The shaft carries a winding or hand
crank at one end, to elevate the weight when it has arrived at the
bottom of the said box; an arm at the other end, does not rotate
with the shaft in one direction (when the weight is being raised)
but a spring enables it to rotate with the shaft when the said
shaft is caused to rotate in the other direction by the descending
weight.

A rod attached to the said arm, is connected to the gate near
to the hinged end. The spring catch of the gate is connected by
means of wires and bell cranks, to posts fixed at each side of the
gate, the said posts having levers at their upper ends. A shorter
post at one side of the gate has a catch attached to it, to secure
or hold the gate when open.

A driver or horseman (without alighting) " depressing the end
" of one of the levers on the posts at each side of the gate,"
disengages the spring catch, and thereby allows the weight to
turn the shaft and to open the gate; when open the gate is
secured by its spring catch fastening into a catch on the before-
mentioned shorter post. "The gate is closed in the same way as

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"it is opened." "The weight, or a spring which may be used instead, by a proper arrangement of gearing, may operate the gate many times before it runs down."

[Printed, 6d. Drawing.]

A.D. 1855, October 31.—N° 2423.

WALENN, WILLIAM HENRY.—(*A communication from Henry Davis.*)—A "self-acting attachment to be applied to gates."

In this invention, the two parts of the gate are hung on vertical rods, which are allowed to turn freely in their bearings; the bearings are attached to suitably-placed gate posts. The rods have cams upon them; each cam has its friction roller attached to its part of the gate, the said friction roller resting upon the upper inclined surface of the cam. The vertical rods are connected to frames or platforms at each side of the gate, by means of bevil wheels, rods, and levers, so that when the said platforms are depressed by a vehicle in passing upon them, the rods and cams will be turned, and the parts of the gate opened on the approach of the vehicle and closed on its departure.

The gate, if small, may be formed of one part only.

The drawings show this invention applied to a gate on a railway. Helical springs are shown upon the vertical rods; these tend to keep the friction rollers firmly down upon the cams. As the locomotive of a train passes upon one of the frames, the cams turn and raise the two parts of the gate upward, free from the catches. The turning of the cams compresses the helical springs, and when the cams are turned half a revolution, the springs throw the parts of the gate open, "in consequence of pressing the friction rollers down the inclined surfaces of the cams." The parts of the gate are closed as the rods and cams are turned back to their original position, which is caused by the locomotive depressing the frame at the opposite side of the gate,

[Printed, 8d. Drawing.]

1856.

A.D. 1856, January 4.—N° 40.

GERISH, FRANCIS WILLIAM.—"An improvement in the manufacture of cast hinges."

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“ One flap of a hinge is first cast with two projections, in each
“ of which is a conical hollow, either cast or subsequently produced. This flap is then placed in a mould suitable for forming
“ the other flap, and iron or other metal is then run into the
“ mould, by which the other flap will be produced with conical
“ projections fitting the conical hollows in the other flap, and by
“ reason of the shrinking of metal of the second flap, the two
“ cones which form the axes by which the two flaps are combined
“ will become free in the conical hollows, and work freely therein ;
“ or the flap first cast may be cast with projecting conical axes,
“ and then the other or second flap will be cast with two hollows
“ to correspond with such projecting cones.”

The drawings show “ a strap hinge ” and a butt hinge, made according to the plan above set forth.

[Printed, &c. Drawing.]

A.D. 1856, February 14.—N^o 330.

McFARLANE, WALTER.—“ Improvements in building and
“ structural works and fittings in metal.”

This invention “ relates to an improved system or mode of
“ adapting cast-iron for building and structural purposes, whereby
“ houses and erections of various kinds may be built and firmly
“ connected in their details without the slightest aid from screws,
“ bolts, nails, or other loose binding apparatus.”

“ In making hinges or other appliances appertaining to cast-
“ iron structures, these details are cast complete, that is to say,
“ the entire casting with its moveable details is removed from
“ the moulds in a complete state. The hinges are produced by
“ first casting the moveable part with its pivots or centres upon
“ it, and by subsequently placing this moveable part in a second
“ mould, having first coated the working part of the hinge with
“ clay, sand, glass powder, tar, or other matter. Thus, when the
“ second mould is cast the entire hinge is completed, the sockets
“ being cast in position upon the pivots already formed upon the
“ moveable part, and the preparation of the working parts
“ prevents the setting of the fresh metal thereon, a good working
“ joint being produced in this manner. Similarly moveable
“ hinged levers, pulleys, latches, catches, and other fastenings,
“ and details are cast in iron, the moving part being first cast of
“ such a shape that it may be retained in its place by collars
“ or projections. This moving part is then placed in a second

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“mould, and the piece is completed by casting the stationary part, the working surfaces being prepared as before to keep them free.”

The drawings show a casing for street water cocks, the hinge to join the cover to the casing being cast in the way above indicated.

[Printed, 1s. Drawings.]

A.D. 1856, March 20.—N^o 670.

DRUMMOND, WILLIAM.—“Improvements in spring hinges for swing doors.”

This invention consists in “constructing spring hinges for swing doors in such manner that the door is suspended on a pivot, and the spring is made to press together two inclined surfaces of such form as to cause the door to close although opened in either direction.”

The pin or pivot fits into a square socket in the floor; its upper part is cylindrical and has a screw cut upon it; its upper end terminates in a conical point, on which the door is supported. The pivot, spring, and closing apparatus are all comprised in a cast-iron frame attached to the door; a screw passes through the upper part of the frame and rests upon the top of the pin. Inside the framing, the pin has an enlarged part, which is made with inclined surfaces at each side, the helical spring which is pressed together by the opening of the door being made to encircle the cylindrical part of the pin. A rectangular piece of metal, capable of sliding up and down between the uprights of the frame, is traversed by a hole through which the said pin passes, and its upper part receives a portion of the helical spring.

If the door is moved either way from its closed position, the rectangular piece turns with it and rises up one or other of the inclined surfaces, thus compressing the helical spring. When the door is released, the pressure of the spring forces down the rectangular piece “and brings the door back to its original position by the action of the inclined surfaces.”

The spring hinge may be fixed at the top or bottom of the door or in any intermediate position; in the latter case, the socket is bracketed to the door post, “and a notch is made in the back edge of the door to admit it.”

[Printed, 6d. Drawing.]

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A.D. 1856, March 24.—N° 690.

HEATON, THOMAS.—“Improvements in self-acting doors and gateways.”

This invention relates to a “method of causing doors or gates to open or close in any direction, by the weight of the wagon or carriage” “acting upon levers, rails, or platforms, in conjunction with certain mechanical contrivances.”

A cross shaft under the road carries two eccentrics, and two bevil wheels; the latter work “into two other bevil wheels on the bottom ends of the gate backs. The said wheels are put in motion by the pressure of the weight coming on the levers rails, or platforms on each side of the gates or doors.” The said platforms are attached to permanent rails “connected with the eccentrics by two pairs of jaws.” A cross lever is placed on the said shaft, “which is acted upon by two springs, to raise the levers or platforms when they are relieved from the weight that has passed over them.” The same results may be obtained “by connecting the platform with a cross lever in the centre, made on the principle of a steel yard, to which motion is given by the weight passing over, thus causing the doors or gates either to rise up, fall down, open sideways, or parallel to the levers or platforms.”

The drawings show the first plan, with bevil wheels and eccentrics, applied to a self-acting gate upon a railway, also to “a mode of acting upon doors or gates at a considerable distance from them.” To open and close the doors of mines, motion is given to a cross shaft by means of slotted cams and connecting rods; a cord, one end of which is attached to a lever on the shaft and the other end to a drum, raises the screen; the return movement is obtained by springs. The principle of a steelyard is also applied to the doors of mines and to other doors or gates; the closing of the doors is effected by weights.”

[Printed, 1s. 10d. Drawings.]

A.D. 1856, March 26.—N° 725.

ROCK, JAMES, the younger.—“Improvements in carriages, parts of which are applicable to other structures.”

The fourth part of this invention (the third part in the Provisional Specification) “consists in an improved hinge for carriage

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"doors." The said hinge consists "of a pair of pivots or invisible joints." The pivots or gudgeons are made "of comparatively considerable diameter," so that they may not be soon worn away by use." The upper "pivot" consists of two plates, one of which is attached to the upper part of the door, and the other is fixed to the body of the carriage; the latter carries a vertical pin or axis, and the upper plate has a corresponding hole or bearing. A pin fixed to the lower plate, works in a segmental groove in the upper plate; thus the extent of the opening of the door is limited. The lower pivot is also composed of two plates, the upper one carrying the hollow bearing, the under one the corresponding pivot or axis. The plates are "curved or formed to suit the shape of the body of the carriage;" one of these plates is fixed to the body of the carriage, and the other to the door. "When this hinge is applied to carriages of a construction in which the lower part of the body is 'turned under,' so that it is of less width at the bottom than at the top, the joint of the door must be curved in a corresponding manner," and not made straight, as is usual when common hinges are used."

[Printed, 1s. 2d. Drawings.]

A.D. 1856, May 2.—N^o 1045.

BROWN, HENRY EDWARD.—"Improvements in the description of hinges denominated concealed hinges, for carriage doors and doors of every description."

"My said invention has for its object the arrangement of the hinge in such a manner that the carriage or other door with which the said hinges are used may be unhung or taken off its hinges without removing either that part of the hinge attached to the door, or that part attached to the door, pillar, or frame."

"In carrying my invention into effect, I construct a plate having in it a recess into which the end of the arm of the hinge engages, the said recess and arm of the hinge constituting a dovetail joint." "The hinge is attached to the door frame or door, and the plate with the recess is attached to the door or door frame, and by causing the end of the arm of the hinge to engage in the said plate, the door and door frame become connected together."

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In order to remove the door from its hinge, it is only necessary to remove a single fixing screw, when the dovetail can be withdrawn from the recess, and the door detached from the door frame.

“Although for convenience of description I have spoken only of one hinge, yet two or more hinges, such as I have described, are required for each door.

“Although I prefer to place the dovetail joint, which constitutes the essence of my invention, in a horizontal plane, yet the same may be placed vertically with the same or nearly the same effect.”

[Printed, &c. Drawing.]

A.D. 1856, May 6.—N° 1066.

NEWTON, WILLIAM EDWARD.—(*A communication.*)—“Improved machinery for making envelopes.”

This invention “relates to the construction and operation of a machine for folding and pasting envelopes, wherein the sheets or blanks are fed in, the edges of the flap pasted, and the flaps folded down, and the envelope thrown out of the machine automatically.”

“The folders are provided with what an ordinary butt hinge would be when the hinged portion was shielded. It is found that, when one part of the hinge moves and the other is stationary, it will drag upon the half-made envelope and turn or twist it out of its place; besides, there is the liability of the edges of the paper getting into the joints of the hinge and clogging up the machine. This is prevented by so forming the hinge that it offers none of its joints to the paper, and prevents an uniform moving surface to the envelope. The folding block “is hinged” “to the under side of the folding plate,” “and by closing up entirely the opening through the said folding plate it becomes the bed upon which the envelope is folded, and the swell of the hinges of the folders moving in the arc of a circle fit up closely against the four edges of this block.”

[Printed, 1s. Drawing.]

A.D. 1856, June 17.—N° 1426.

SADLER, JOHN, GREEN, JOSIAH, and DAVIS, THOMAS.—“Improvements in the manufacture of hinges.”

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1st. "Finishing the curved surfaces of the joints of hinges by bringing the said joints under the operation of a cutter, to which a helical or corkscrew motion is communicated." The said cutter is a part of a machine having a bed plate, standards, and slide, the slide being driven from the main shaft by means of a crank; an arrangement of pulleys, in connection with a fixed piece of catgut, tend to rotate the slide during its reciprocating motion and thus to convey to the cutter the above-mentioned helical motion.

2nd. "Finishing the edges of hinges by subjecting them to the operation of a cutter, to which a reciprocating rectilinear motion is communicated." The said motion is communicated to the cutter by means of a connecting rod and crank, the hinge to be finished being held in a vice and brought under the operation of the cutter or withdrawn therefrom by an arm or lever. The cutter is fixed in the bar by means of a pyramidal termination at one end and two slots (one at right angles to the other) at the other end; the pyramid fits into a corresponding cavity in the bar, and a cotter takes into one of the slots at the other end of the cutter and fixes it firmly in its place. The surface of the cutter is "cut after the manner of a file or rasp."

[Printed, 10d. Drawing.]

A.D. 1856, July 18.—N° 1692.

HIPKINS, GEORGE FREDERICK, and BRITTEN, JOHN.—
"Improvements in applying springs or weights for the purpose of closing doors, or resisting shocks, strains or pressure."

1st. Making telescope door springs to act as arm springs, by hinging the part which is generally screwed to the back of the door to the door post abutment.

2nd. Springs "in which a helical spring is made to operate directly on an arm in such manner that the bearings of the spring may arrive at or near a dead or inoperative centre when the door is fully open."

3rd. Springs "in which a roller, guided by one or more other rollers or by one or more radius rods, is made to work against an irregular incline for the purpose of operating on an arm." A helical spring may be used, or a wedge on the arm may press against rollers on a horse-shoe shaped spring. In one case, the spring is relaxed when the door is full open, by means of a suit-

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able recess in the incline, the position of the roller allowing it to enter the recess.

4th. A door spring in which the case of a helical spring "is made to act as one member of a doubled knuckle." The spring case, jointed to a standard on the door post, together with a link joining the outer end of the spring to a hook on the door, forms a double knuckle "similar to that used in the Columbian printing press."

5th. Another method of applying the said doubled knuckle consists in substituting a cord and pulley for the link in the 4th improvement.

6th. Another arrangement of "Stanhope levers," similar to those used in the Columbian printing press. In one case a knuckle on one side of a door is actuated by a blade spring or by a torsion spring, "wholly or partially on the other or opposite side of the door." In another case, the spring is a helical spring on the same side of the door as the knuckle.

7th. Apparatus in which knuckles are actuated by cords and weights.

8th. A "bow-string" spring, in its endeavour to straighten itself will close the door, it being jointed to a hinged plate, one part of which is attached to the door post, and the other part to the door. An open knuckle may be substituted for the bow-shaped spring.

9th. An improvement on Gerishe's door spring.—The tension chain passes to or beyond a dead or inoperative centre "when the door is about square open."

10th. Attaching the foundation plates of arm springs to door posts.—A slotted plate is connected to a fixed plate by a rivet, and has a bearing screw to determine the angle between the plates. A hook may be substituted for the rivet and the inclination of the plate may be effected by a wedge.

This part of the invention also refers to "adjusting the tension of the tensive member of Stanhope knuckles." This is by means of the hook which is screwed or otherwise connected to the door; the screw may be screwed more or less deeply into the door.

The 11th, 12th, 13th, 14th, 15th, 16th, 17th and 18th improvements refer to other applications of the invention than door springs.

[Printed, 1s. Drawing.]

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A.D. 1856, August 11.—N° 1885.

CARTLAND, JOHN.—“A new or improved door spring.”

This invention “consists essentially of a helical or coiled spring of steel, iron, brass, or other wire, the said spring being acted upon in such a manner by its connection with the door or door hinge that the said spring shall be coiled or uncoiled on the opening of the door. The elastic force of the spring is exerted by a winding action instead of a lengthening or shortening action, as is usual with helical door springs.”

The drawings show an arm door spring, in which the spring is fixed at the bottom to a shoulder on the plate; the upper end of the spring is fixed to a rod passing through a hole in a top shoulder on the plate; the arm is fixed to the top of the rod. The tendency of the spring to uncoil itself presses the arm and tends to close the door.

In a second application of this invention, the spring is concealed in the hinge; each flap has its own axis, and one end of the coiled spring is attached to each axis. When the flaps are opened, the tension of the spring caused thereby tends to close the door.

The third application of this invention is to closing doors which open in two directions. This apparatus very nearly resembles two of the hinges, described as the second application of this invention, connected together. When the door is opened in one direction, the spring connected with one axis tends to close the door, and when in the other direction, the spring on the other axis performs this office.

In a box spring, inserted in the floor, one or other of two springs is called into action by means of a cam; deflection in one direction causes the cam to act upon the arm of one spring, in the other direction the other spring is made active by its arm. These two deflections correspond to the opening of the door in one or other direction, the consequent reaction closes the door.

[Printed, 6d. Drawing.]

A.D. 1856, August 16.—N° 1919.

LILLEY, SAMUEL.—“Improvements in the manufacture of “ships’ iron work, a part of which improvements is applicable to the manufacture of other articles in iron.”

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It is set forth in the Provisional Specification that (amongst other applications), this invention is applicable to the casting of hinges.

The inventor states :—" My said invention consists in the manufacture of slides, blocks, and other castings for ships by the use of chilled moulds, that is to say, metal moulds in place of the ordinary sand moulds. I make the said ship's castings either of ordinary cast iron or of that kind of cast iron which may be softened or annealed."

" In carrying my invention into effect, I make suitably formed moulds of cast iron, the said moulds being provided where necessary with metallic cores passing into or through them. The parts of which the said moulds are made are joined together when the said moulds are being used by methods commonly resorted to in other casting processes, and which I do not think it necessary to describe. The interiors of the moulds are made accurate in form and smooth."

[Printed, 4d. No Drawings.]

A.D. 1856, November 15.—N° 2709.

DREW, JOHN.—" Improvements in library tables or desks."

This invention " consists in a new arrangement of flap or slope, and in a hinge lock connected therewith, and communicating with a set of bolts on one or both sides thereof, which bolts lock and unlock a nest or nests of drawers, as may be required, at the back of the table, and on one or both sides of the slope." The inventor forms " the slope with a hinge at or about the centre thereof, which, on being hinged back, and the whole slope turned up, exposes fittings immediately in front of the writer or user, containing papers, envelopes, and the necessary accessories for writing. The main hinges to the slope while it is being turned back bring down a bolt or bolts on each side thereof, and allow of the drawers above mentioned being opened; the return of the hinged flap to its original position acts upon the bolts and locks the drawers.

" In the arrangement just described the writing surface of the table is flat; but where it is desired to be sloping, the main hinges before alluded to are connected to a flap flush with the table, in such manner as, on the hinged flap being thrown back,

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“ to cause the flush flap to rise at the back, and afford a sloping surface or desk for writing.”

[Printed, 10d. Drawing.]

1857.

A.D. 1857, January 1.—N^o 7.

MABERLY, FREDERICK HERBERT.—“Improvements in the construction of wheeled carriages.”

An improvement, set forth in the Final Specification but not mentioned in the Provisional Specification, consists of a “hinge for door carriages of every description.” “This joint is made by a pin passing from above the door of the carriage to the bottom side plate of the same, and behind the door also, and fixed to the upper and lower part of the carriage and then by a strip of copper, brass, or iron, the whole length of the door being bent round this fixed pin, and the sides of this copper, brass, or iron, being let in the one side to the inner side of the door, and the other to the outer side of the door, and then rivetted through the door in several places to each other, and so fixed firmly on the door, and thus a safety joint is formed.”

In one carriage, described in the Specification and shown in the drawings—a cab or brougham—“the doors are hinged on the opposite side to what is generally the case.” “If the wheels are not plane wheels, but spoke ones, and needing it,” the inventor then places “a spring-hinged guard beside the same, so that there shall be no danger from them in getting out or in, under any circumstances.”

The other improvements refer to lowering the body of the carriage, to bringing the wheels within the carriage, and to the employment of certain springs. The fore part of the door to which the above hinge is applied is packed, as well as the door post.

[Printed, 8d. Drawing.]

A.D. 1857, January 10.—N^o 84.

GRATRIX, JOHN, and GRATRIX, CHRISTOPHER.—“Improvements in looms.”

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1st. Improvements in the temples known as the "roller and box," described in No. 8790 (A.D. 1841).—To enable the weaver to unweave any portion of the cloth, and to allow the warp to be put in without removing the roller from its position, a hinge arrangement is used. "In that part which forms the bush and the joint of the hinge for the roller to work in," there is "an oblong slot, through which a two-sided thumb or gib-headed set screw passes, so that by part of one turn the hinge and roller are liberated or held firm in their places." The inventors "use two or more of the said rollers, according to the quality of the fabric to be templd," and they "case-harden them to make them more durable. By the arrangement of the said hinge and rollers the operative can open the box or case and pass the fabric between the rollers, so that when the box or case is closed the fabric will be under one roller and over the other, dispensing with the necessity of a midfeather, as now commonly used."

2nd. Improvements in self-acting side temples. — A hinge, similar to that above described, is applied to these temples. The peculiar construction of the joint of the hinge gives "considerably more reed space than has been hitherto obtained, and also enables" the top and bottom rollers to be of equal length. The arrangements for three and four rollers respectively are shown in the drawings.

3rd. An improved conical taking-up roller, which prevents "the cloth from creasing or crimping, which is generally the case with straight rollers."

[Printed, 8d. Drawings.]

A.D. 1857, April 1.—N^o 907.

NEWTON, ALFRED VINCENT.—(*A communication.*)—"Certain improvements in fire-arms."

Amongst the many peculiarities which constitute these improvements, the chamber that holds the charge connects the breech with the barrel by means of a spring hinge, which also forms a "sight."

This hinge is employed in combination with a stationary inclined breech plate or recoil shield, and an inclined rear of the breech. A ball-and-socket valve face is used in combination with the said hinged chamber. The said valve face projects "across the joint between the chamber and barrel so far as of

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“ itself to bolt the chamber into the line of the barrel, the taper
“ or curve of the valve face being such, in relation to the position
“ of the joint of the hinge, that it shall swing out of and
“ into its seat without slide or abrasion thereon.”

The hinge is arranged upon the top of the charge chamber,
“ whereby the chamber swings over into the most *elevated* and
“ unobstructed position for the insertion of cartridges, while the
“ barrel and not the joint of the hinge bears the weight of the
“ chamber when the latter is open, and the cutting away and
“ consequent weakening of the stock, which would be necessary
“ to enable it to swing in any other direction, is obviated.”

“ One or both leaves of the said hinge constitute a spring or
“ springs,” “ so as to yield ” “ in case of any obstruction lying
“ on or adhering to the valve face.”

The chamber may be applied so as to swivel laterally, so that
it may be turned to a vertical position, when required, in certain
cases for the convenience of loading.

In a weapon for military use, the hinge is made a rigid lever,
“ extending rearward beyond the lock.”

[Printed, 1s. Drawing.]

A.D. 1857, June 1.—N^o 1539.

FELLOWS, FRANK PERKS.—“ Improvements in the manufacture
“ of hinges, cocks, and other jointed articles, or articles of
“ which one part is required to be capable of turning upon or in
“ another part of the same article.”

In making a hinge, the inventor first manufactures a pin
having a series of collars; this pin is placed in a mould, and
metal is cast into the said mould, “ so as to fill the spaces round
“ the pin, and form the two flaps of the hinge.” The two parts
of the hinge are prevented from uniting, either by inserting small
partitions of iron or paper, “ or by casting one side or part of the
“ hinge first, and then placing that part in another mould, and
“ casting the other part to it.” “ When knuckles with rounded
“ ends are to be made, the collars are made of smaller diameter,
“ or omitted, and the sand of the mould produces the separation
“ between the adjacent knuckles.” The pin may itself be formed
by the process of casting; two collars are connected by an intermediate
piece, so as to resemble a reel, “ and with a perforation
“ or cavities in the axis.” “ The metal which forms one part of
“ the hinge flows *through* the reels, and forms the pin of the

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hinge; while the metal which forms the other part of the hinge flows round the reels, and forms the knuckles of the hinge. When one side of the hinge is cast first, the parts of the mould between the collars (which would receive the knuckles of the second side) may be filled up with cylindrical pieces or cores of metal placed round the pin." "Rising hinges are made by employing a pin with two spiral blades or inclined collars, instead of parallel collars, and causing the metal of each part of the hinge to be cast in a spiral form between these blades."

[Printed, 2s. 8d. Drawings.]

A.D. 1857, June 15.—No 1667.

HEATON, THOMAS.—"Improvements in self-acting doors and gateways."

This invention consists of improvements upon that set forth in No. 690 (A.D. 1856). In this invention platforms are entirely dispensed with.

The "present improvements consist in placing horizontal arms or levers at each side of the passage or doorway, one end of each lever turning upon a pin or pivot fixed to suitable framing, and the other end passing through an aperture in the door, at which part the levers nearly meet, being bent for that purpose."

"In the holes or apertures there are friction pulleys to allow the ends of the said levers to pass easily through them." The doors slide on cross bars or rails, "so that when a horse, person, tub, waggon, or anything comes in contact with the aforesaid bent levers, pressing laterally against them, the ends of the levers and doors pass into recesses, "where they remain as long as anything presses against the levers;" the ends of the lateral pressure ceases, "the doors close of themselves, either by means of pulleys and weights, or by giving the cross bar or rail on which they slide a slight decline towards the centre." Or instead of horizontal levers only, they may be conjoined with springs, and in certain cases springs may be bent, so that when anything presses against them the doors may be opened. These improvements may be applied to vertical shafts passages.

The drawings show the above improvements applied to the shafts of mines, and to a hoist. In another h

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the pins come into contact with levers that have slots at their connection with the sliding doors to allow vibration.

[Printed, 1s. 6d. Drawing.]

A.D. 1857, July 13.—N^o 1941.

STARR, HENRY.—(*A communication.*) — “Improvements in
“ hinges.”

“This invention relates to the construction of ordinary hinges
“ used for hanging doors and other similar purposes, and by a
“ simple alteration or addition in the pattern from which they
“ are cast, or in the mode of fitting them together, they may
“ be converted into springs or re-acting hinges, for the purpose
“ of keeping doors closed or open. This is effected by casting
“ an angular or any other shaped socket, or a projection, if
“ preferred, on the end or ends of the nuckle of the ordinary
“ hinge, or such socket may be cut therein. Such angular
“ socket or projection is intended to receive and hold the end
“ of a torsion bar, or the projection from or fitting of any
“ suitable form of spring, which being acted upon by the
“ forcible opening of the door is free to re-act when the door
“ is released, and throws it back into the door frame, and thus
“ closes the opening, or the operation may be reversed when
“ required for the purpose of keeping doors or shutters
“ open.”

“In applying the hinges to the door, care must be taken to
“ reverse the flaps of such hinges, so that the door has the odd
“ number of nuckles in the top hinge when it has the even
“ number below, as by this means the torsion of the bar is
“ effected, and which would not take place if the hinges were
“ applied, as is ordinarily done, when the even or the odd
“ nuckles are respectively placed on the door or the hanging
“ post. The sockets may be cast or formed at each end or one
“ end only of such hinges.”

The drawings show this invention applied to a door.

[Printed, 6d. Drawing.]

1858.

A.D. 1858, January 9.—N^o 39.

CHURCH, WILLIAM.—“Improvements in measuring rules, compasses, and other mathematical instruments, and in machinery to be employed in manufacturing measuring rules and other mathematical instruments.”

The portions of this invention which relate to hinge joints are as follows:—

The joints of measuring rules are made “of several plates of metal equal in thickness to the thickness of the portions of wood with which they alternate.” The metal part of the principal joint of the rule is “of a different form from that ordinarily employed, that is to say, the base of the said metal part is made of a curve having the centre of the rule joint for its centre.”

In the machinery for manufacturing measuring rules, when the metal plates of the joint have the above-mentioned curved figure, “the wood may be cut away by two rotating cutters between which the wood passes, a middle cutter forming the slit for the middle plate of the joint. The metal plates for the joint are first cut out by a press and the centre hole drilled; they are then strung upon a wire or mandril and fixed in a chuck upon the face plate of a lathe. A cutter moving parallel to the axis of the lathe performs a reciprocating motion and planes the edges of the plates, the said plates being suitably moved by the chuck. In order to plane the edges of the circular part of the plates the mandril upon which they are strung is brought into a line with the axis of the lathe, and a slow motion given to the said plates through three-quarters of a circle, during which the before-mentioned cutter planes them. The plates forming the joints and the pieces of wood to which they are fitted are drilled by a series of drills geared together and working simultaneously; pins are inserted in the holes and are rivetted by a series of hammers or rams lifted by a crank. The bed on which the rule is supported has depressions opposite the pins, so that the rivetting is effected at the lower as well as the upper ends. By inverting the rules, and operating on them with a plane portion of the bed underneath them, the rivetting is completed.”

The machines for accomplishing these operations, as well as other machines employed in shaping and dividing the said rules

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and other mathematical instruments, are copiously illustrated in the drawings attached to this Specification."

[Printed, 3s. 4d. Drawings.]

A.D. 1858, March 1.—N^o 406.

BILLING, JOHN.—"An improved throat and door for chimneys
" and flues."

The said throat is a double conical frame, of terra-cotta or fire clay, built into the chimney above the fire-place; "a door or valve is made to fit into this throat, and is connected to it by a joint or hinge, and is provided with a rod or handle by which it can be raised or lowered."

The door is an elliptical plate of wrought iron, and lies on a shoulder in the throat. To form the hinge of this door, two stout iron wires are secured to the terra-cotta; these wires start out from the top of the terra-cotta and are each bent round so as to form two separate vertical portions with upper loops. An iron rod, rivetted to the door, corresponds to the pin of the hinge and has two end projections, one of which enters each loop of the said wires. When the chimney is in use, the plate is pushed up by the handle, which raises it till the bar reaches the bend of the wires; by pushing the handle up still further, the door is opened to any required angle, or may be raised to a vertical position, if desired. "By this construction, the door is prevented from striking against the upper cone and from becoming hinge-bound by the accumulation of soot, as the door first rises in a horizontal position, or nearly so, and afterwards assumes the angular or vertical position." When the handle is detached the door can be removed by lifting the plate so that one end of the bar is raised to the bend of its wire and disengaged therefrom; the other end of the bar can then be drawn out and the door turned round so as to pass through the widest portion of the throat. A new door can be introduced by reversing these operations.

[Printed, 6d. Drawing.]

A.D. 1858, March 4.—N^o 431.

MOORE, PAUL.—"An improvement or improvements in the
" manufacture of hinges."

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" My invention consists in the ornamentation of hinges (more particularly those of the class termed cabinet hinges) by making them of metal upon which any desired pattern or device has been previously rolled or impressed, or by rolling or impressing upon hinges already formed the pattern or patterns that may be required, by which a highly ornamental effect may be produced upon the flaps of such hinges at a very trifling cost; and the way in which I prefer to carry out this my invention is, by first casting a strip of metal, then rolling it out to a given size, and afterwards passing such strip through rollers engraved or embossed upon their surfaces or peripheries, by which last-named operation patterns or devices will be produced upon the strip of metal; I then cut from the strip the pieces of metal to form the flaps of the hinge, and bend round one edge of each to form the joint;" " the parts of the hinge are then put together and finished in the usual manner."

[Printed, 4d. No Drawings.]

A.D. 1858, March 8.—N^o 469.

YOUNG, JOHN.—(*Provisional protection only.*)—" An improvement or improvements in the manufacture of hinges."

The pattern hinge is pressed into the sand of an ordinary casting frame, " the hinge being nearly wide open, and the sides, which when the hinge is closed are brought into contact, being placed downwards." A piece of sheet iron is then placed upon the pattern hinge, " the said piece of sheet iron standing in a vertical plane along the ridge of the joint, the lower edge of the said piece of sheet iron being so cut and bent that the divided parts enter and fill the spaces between the inner edge of the flap on one side and the cylindrical part of the joint of the other side, that is to say, the only parts of the two sides of the pattern hinge not separated from one another by the sheet iron are the flat surfaces of the parts of the joint situated in planes perpendicular to the axis of the joint. An empty frame placed upon the mould is filled with sand, so as to take an impression of the side of the hinge now uppermost. The whole being reversed, and the first made half mould being taken off, the axis of the pattern hinge is drawn out, and the two sides of the hinge are separated and removed. There is thus obtained a perfect mould of the pattern hinge, the before-mentioned pro-

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“jecting pieces of sheet iron occupying the spaces where the two flaps of the hinge are separated. An axis, having a number of discs thereon, at distances equal to the length of the alternating portions of the joint, and of the same diameter as the joint, is dropped into mould at the said joint. When metal is cast in the mould there is formed a hinge, the two flaps of which are in separate pieces, but connected by the axis.”

[Printed, 4d. No Drawings.]

A.D. 1858, April 8.—N^o 752.

MASON, STEPHEN ORATOR. — (*A communication from John Chauncy Mason*).—“Certain new and useful improvements in door hinges.”

This invention consists “in so constructing the joint parts or journals and bearings of the two leaves of a hinge, with one or more locking recesses and holding projections or their equivalents, as to enable the two leaves to be either connected or disconnected in a lateral direction, and to operate together.”

The drawings show the hinge applied to one edge of a door only, and, in another instance, to both edges of a door “for the purpose of enabling it to be opened or swung out at either edge.” Certain semi-cylindrical projections “serve to maintain the male and female parts of the hinge in connection when they are together and do not lie flatwise on one another. The peculiar advantage of this hinge is that it may be formed in but two pieces, and it does not require any separate center pin or any drilled bearing or socket for the reception of such a pin.”

A gate hinge has its female part constructed with a cavity formed not only to receive and allow to operate the projecting part of the male portion, but the journals thereof. This projecting part is furnished with a notch, which is for the reception of a part of the female leaf, “in order to allow the journals of the male leaf to enter their bearings of their female leaf during the process of conjoining the two leaves;” “as soon as such leaves have been joined together,” the projection of the male leaf and its journals acting in connection with the said part of the female leaf and the bearing “will maintain the two leaves of the hinge in connection.”

In both of the above-mentioned hinges, the leaves turn with respect to each other like the leaves of an ordinary butt hinge.

[Printed, 6d. Drawing.]

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A.D. 1858, April 10.—N^o 776.

OXLEY, JOHN.—“Certain improvements in the doors and sashes of carriages.”

1st. “The construction of elastic or compressable pads or cushions mounted in metal frames, and protected by a metal band, case, or cover.”

2nd. An “arrangement and mode of fitting and working sliding sashes, glass frames, blinds, and shutters for railway and other carriages.”

3rd. “The hinges of doors, more particularly the doors of railway and other carriages.” This improvement “consists in forming a metal socket or cap for the bottom knuckle, between the under side of which socket or cap and the top face of the bottom knuckle” the inventor inserts “a vulcanized india-rubber or other elastic washer or flat ring.”

The drawings show a hinge for a railway carriage door, one flap of which has a single knuckle, and the other flap a double knuckle, a central pin passing through the said knuckles. A metal cap or socket is made to fit over the lower knuckle of the latter flap. A vulcanized india-rubber washer is placed within the cap and between the “top side” of the knuckle and the “under side” of the cap. The form of the hinge may be suitably varied for the hinges of other doors, “and instead of one elastic washer two or more of such washers may be employed.”

[Printed, 8d. Drawing.]

A.D. 1858, May 17.—N^o 1100.

HILER, SELAH.—(*Provisional protection only.*)—“An improved method of coating or amalgamating iron with silver, copper, brass, or other metals or alloys of metals.”

“In the manufacture of stair rods, trunk nails, buttons, tubing, hinges, bolts, and various other articles made out of metal, it has been usual heretofore to form the same of brass, or other ornamental metal, which of itself is sufficiently strong for the purpose, or else is drawn over a mould or form of iron, or other cheaper metal, but even in this form the brass or similar metal is costly if sufficiently thick, or if rolled very thin is not sufficiently rigid.

“The nature of my said invention consists in forming a surface of brass or other ornamental metal on iron or steel as follows:—
“I take a suitable sheet, bar, or block of wrought iron, (or steel),

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“ and clean the surface thereof on one or more sides and heat the same, and while heated cast on to said surface or surfaces the brass or other metal, and the union may be accelerated by the use of borax or other flux, or the coating metal may be united to the iron while the latter is in a state of fusion, and the brass or other metal is to bear the desired proportionate thickness to that of the iron.

“The iron and brass, or other plating metals may then be rolled down to the desired shape or thickness, or cut out, or made up into any articles for which said plated or coated iron may be adapted, such as buttons, stair rods, tubing, bells, hinges, bolts, and other articles.”

[Printed, 4d. No Drawings.]

A.D. 1858, July 22.—N^o 1653.

GREEN, HENRY.—“A new or improved hinge for hanging and closing doors, gates, or windows.”

The lower edge of the door is attached by an arm to a vertical shaft that rises from the floor box containing the mechanism. On the lower end of the vertical shaft, in the box, “is a cam, which, when the door is opened in either direction, bears against a frame which slides in a horizontal or nearly horizontal plane, moving the said slide from its normal position.” A weight is hooked to the slide, which, on the motion of the slide, is drawn from its original position; it “rests upon a transverse bar carrying a roller to facilitate the motion of the weight over it, and the position of the said weight is such that, as it is pulled by the sliding frame, its centre of gravity is raised and made to approach a position immediately over the said transverse bar.” The resistance of the weight to the opening of the door diminishes as the door opens, “and the tendency of the weight to return to its normal position effects the closing of the door. In order still more effectually to hold the door in its place when closed, that part of the weight which rests upon the transverse roller bar is made concave, so that the roller fits thereon and causes great resistance to the first opening of the door.” “Instead of a weight, a helical or other spring may be employed to act upon the before-mentioned slide with the same or nearly the same effect.” The substitution of the spring for the weight is not mentioned in the Final Specification.

[Printed, 8d. Drawing.]

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A.D. 1858, September 21.—N° 2118.

DOWLER, GEORGE, and CHELLINGWORTH, THOMAS TERTIUS.—(*Provisional protection only.*)—"An adjustable torsion spring for doors or other purposes."

This invention "consists in applying a rod of steel, attached at one end to a bracket (preferably of brass or iron,) fixed to the door post or frame; the other end is fixed to a similar bracket, attached to the door (supposing, for example, that a door is the object to which it is applied); when the door is opened the steel rod is twisted, the said twist acting as a spring. At the end of the rod that is fixed to the bracket attached to the door frame or post is a small wheel or round nut, with notches filed, cast, or formed in it, and a catch is attached to the bracket which fits into any of the notches on such wheel or nut. A key or handle fits the end of the rod filed square for the purpose. The torsion on the rod (and therefore the strength of the spring) may be increased at pleasure by means of the key or handle, and it is kept in place by the catch fitting into the notches on the nut."

[Printed, 4d. No Drawings.]

1859.

A.D. 1859, August 23.—N° 1926.

HILL, WILLIAM HENRY.—"An improvement in the manufacture of boxes or cases, and in fastenings for the same."

"My improvement in boxes or cases consists in uniting the sides to the bottom and the top to the sides by means of gudgeons and pintles, whereby nails and screws for attaching the sides to the bottom and top are entirely dispensed with. My method of constructing cases allows of the sides, ends, top, and bottom being disconnected when empty, and of their being laid flat together for stowage or carriage, whereby little space will be occupied by them. In the gudgeons and pintles for attaching the front and back sides, or any two of the sides or ends to the bottom, the pintle is free to slide to-and-fro as a bolt to allow of the gudgeon being placed in position before the attachment is made secure by driving the pintle into it."

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The drawings show a gudgeon and pintle for attaching the sides of a box to the bottom. The gudgeon has a hole bored through it, one half of the hole being somewhat larger than the other half. This gudgeon is screwed by its arm to the bottom of the box. The pintle is inserted by its small end through the hole in the gudgeon, and has a finger-piece screwed to it, "so that the said pintle cannot be removed from the gudgeon until the finger-piece is unscrewed or unrivited. The pintle takes into a gudgeon, which is screwed to one of the side pieces of a box, and the tail-piece falls into a slot formed in the bottom, so that the side piece cannot be removed from the bottom until the tail piece is raised from the slot, and the pintle pushed back."

To the under side of the lid are attached gudgeons into which pintles fixed to one of the side pieces take. "The gudgeons and pintles can be made to act as a hinge, and at the same time the lid can be slid off as before."

[Printed, 8d. Drawing.]

A.D. 1859, October 22.—N^o 2416.

FOX, WILLIAM, and WILLIS, JAMES.—"Improvements in the manufacture of umbrellas and parasols, part of which improvements is applicable to other purposes."

The 1st, 2nd, 3rd, 4th, 5th, 6th, and 7th parts of this invention refer to the stems or sticks of umbrellas and their fittings; the 8th part of the invention refers to the steel ribs of umbrellas.

9th. "Two methods of forming joints for folding parasol and umbrella stems or sticks.

"The first method consists in connecting the handle and the stick by means of a joint piece pinned to each as usual, and applying over or partially over the joint a tube of hardened and tempered steel attached to the stem or stick, a portion of which tube is cut away in such manner as to allow the handle to force it open, enter it, and be clasped firmly by it.

"The second method consists in attaching to one of the pieces (say to the handle) a stout piece of metal carrying a hinge, lug, or lugs, and to the other piece (say the top half of the stick) a stout piece of metal carrying a corresponding hinge, lug, or lugs, and a spring catch also. By pinning the lugs of

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“ these two pieces together, a spring catch hinge joint suitable for the purpose is completed.”

10th. “ A method of attaching the handle of a folding umbrella or parasol stem or stick to the tapered metallic socket, which receives it by fixing a small screw or screwed pin or rod to the end of the said handle, and screwing the said screw or screwed pin or rod into a threaded hole provided for it in the end of the socket.”

[Printed, 8d. Drawing.]

A.D. 1859, November 12.—N° 2570.

VICKERS, ARCHIBALD.—“ A method of opening and shutting two or four gates or doors simultaneously, and for fastening the same when either open or shut, applicable to railway crossings and other purposes.”

This “ method of opening and shutting two or four gates or doors simultaneously and for fastening the same when either open or shut, consists in the employment of a crab turning two or four upright shafts by means of wheels, worms, and pinions. The shafting may be either vertical, oblique, or horizontal, and may be made of wood, iron or any other suitable material. The upright shafts are the hinges or pivots upon which the gates or doors are hung. These upright shafts are situated at four points at equal distance from one another, and are in connexion with two line shafts running parallel with each other, and connected together by a cross shaft worked by a pair of mitre wheels at each end of it. The crab works on the end of one of the line shafts.”

“ When the gates are open they cannot be shut without turning the crab, and when they are shut the same means must be employed to open them. The worm wheel on the foot of the gate posts intersecting the grooves of the worms forms a perfect lock.”

“ In some cases the gates may be made to work either with or without the crab.”

[Printed, 10d. Drawing.]

A.D. 1859, December 2.—N° 2729.

BRABSON, THOMAS FREDERICK. — “ Improvements in door springs.”

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1st. "Improvements in such door springs as are ordinarily let into the floor, and act directly upon the axis on which the door turns."—A roller, working on an arm on the axis of the door, acts "upon the forked arms of one end of a lever turning upon a horizontal axis. The other end of the lever is pressed upon by a flat spring situated in a horizontal plane, and consisting of a series of steel plates."

2nd. "Improvements in such door springs as are attached to the door and door frame."—"In a cylindrical case fixed to the door a helical spring is placed, the said spring urging forward a piston carrying a roller. On the door frame is fixed a plate carrying a camb or excentric against which the roller on the piston bears. The said camb is jointed to the spring case. On opening the door the camb presses upon the roller and piston, and compresses the spring, which, by its reaction, tends to close the door; a regulating screw is placed at the end of the case, in order to adjust the strength of the spring."

In a modification of the spring just described, bow springs placed in a rectangular case urge forward a slide working in the said case; "a knuckle carried by a plate bears against a roller on the said slide. The opening of the door causes the slide to be pressed into its case by the knuckle, and thus effects the compression of the spring, when the door is at liberty to move, the springs return to their uncompressed form, and in doing so close the door."

[Printed, 10d. Drawings.]

A.D. 1859, December 28.—N° 2959.

ROONEY, CORNELIUS JOSEPH, and RENSHAW, DAVID.—
"An improvement in spring door hinges."

In this invention the force of the spring can be easily adjusted, and the removal and replacement of the spring can be effected "when required, without interfering with the connection of the parts of the hinge."

"The hinge is composed of two leaves or wings connected by a spindle or axis, as usual, but the upper part of both these is cut away, so as to form a space around the spindle for the insertion of the spring, one end of which is fitted into a groove in an enlarged portion of the spindle, and the other end is fixed to one of the leaves or wings, while a portion of the

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“ spindle is formed square in the cross section, and fits into a
“ correspondingly shaped socket in the other leaf or wing. By
“ this arrangement one leaf or wing of the hinge is fixed on
“ the spindle to which one end of the spring is connected, and
“ the other leaf or wing to which the other end of the spring is
“ fixed is capable of turning loosely on the spindle. The elastic
“ force capable of being exerted by the spring on the hinge is
“ adjusted by raising the square part of the spindle out of its
“ socket, and turning the spindle into the required position,
“ and then inserting the end of the spring in the groove therein.
“ And the spring is easily removed by unscrewing the one end
“ of it from the leaf or wing and withdrawing its other end
“ from the groove in the spindle, when it may be taken out of
“ the recess formed in the two leaves or wings. Also a fresh
“ spring may be inserted in the recess, and connected at its two
“ ends to the spindle and leaf or wing respectively.”

In one arrangement shown in the drawings, the outer end of the spring is secured to the inner side of the wing.

[Printed, &c. Drawing.]

1860.

A.D. 1860, April 3.—N° 855.

RIMINGTON, WILLIAM, and RIMINGTON, WILLIAM, the younger.—“ Improvements in box hinges for swing doors.”

This invention is designed to obviate the tendency that swing doors have “to be blown open by the wind in consequence of the
“ spring or springs employed being at their weakest point when
“ the doors are closed, and the difficulty of opening such doors,
“ and keeping them wide open, when required, in consequence
“ of such aforesaid spring or springs being at their strongest
“ when the doors are opened to their fullest extent.”

The inventors “employ two levers on each side of the interior
“ of the box, one of which is bent and hooked on at one end to a
“ wrought-iron arm formed upon the pivot, upon which the
“ hinge turns or moves in a step; the other lever is attached to
“ the end of that before mentioned by a pin, and works on a
“ centre at its other end, where also is a friction roller which acts
“ against a powerful spring. These springs are adjusted to any

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“ required strength by set screws. The doors are also adjusted to their required position by set screws acting against the second levers, and the whole enclosed in the box by a lid or cover. The pressure of the springs is thus at a maximum when the doors are closed, and at its minimum when wide open, thereby giving the desired effect.”

[Printed, 6d. Drawing.]

A.D. 1860, May 30.—N° 1332.

COX, FRANCIS BLAKEMORE.—(*Provisional protection only.*)—
“ Improvements in measuring rules.”

1st. “ The following methods of making the joints of measuring rules. I construct the joint, called the first joint, used for folding rules of a hinge form, and of cast or stamped metal, the flaps of the hinge being of an ornamental character. I attach the sides of the hinge to the wood or ivory sides of the rule by means of rivets, the flaps of the hinge lying by preference on the surface of the rule instead of being inserted therein as is usual. I make the middle joint of stamped or cast metal, and ornamental in form, the parts of the joint lying by preference upon the wood or ivory sides of the rule in the same way as described with respect to the first joint. I fix one part of the joint head on each side of the rule instead of fixing both parts on one side as is usually done, I also place the hollow pieces corresponding to the parts of the head one on each side of the rule. I make the internal part of the joint of a circular piece of metal fixed to one of the heads of the joint by riveting or soldering, or the said internal part of the joint may be made solid with one of the heads of the joint.”

2nd. “ Making a dial plate at the head of the rule, either in or upon the joint, the said dial plate having a number of stops in which a spring engages.”

3rd. “ Capping the ends of rules with ornamental metallic caps.”

“ The flaps of the joints herein described, may either be let into the wood or ivory part of the rule, or may lie on the surface so as to be above the level of the rule. The joints may be gilded or lacquered, and the dial plate and stop spring may be applied to measuring rules of the ordinary kind.”

[Printed, 4d. No Drawings.]

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A.D. 1860, July 5.—N° 1630.

NEWTON, ALFRED VINCENT.—(*A communication from George Bowen Pierson.*)—(*Provisional protection only.*)—"An improved construction of spring butt hinge."

"The eyes of the butt hinge are made somewhat larger than for ordinary hinges, and with a sleeve joint to keep them in their proper place. Within the eyes of the two leaves forming the hinge, a helical spring is introduced, which is connected at the bottom end to a cap that interlocks with the eye of one leaf, and at the top end with a nut that forms the upper cap of the hinge. On this nut fits a removeable ring that is provided with a V-groove to receive a tenon projecting from that leaf, which is screwed to the swinging door, gate, or shutter. The several parts are secured in place by a pintle that passes through the axis of the hinge. The bottom cap is cast with a short neck and two legs, which latter fit into corresponding recesses cast in the edge of the adjacent eye, and prevent the cap and consequently the spring from turning at this point. The upper cap or nut at the other end of the hinge is intended to turn, it being furnished only with a short neck that fits into the end of the eye adjacent to it, for the purpose of keeping it steady and in place on the eye. This upper cap or nut is cast with a cylindrical head that has lateral perforations, and it is pierced through the centre to allow the pintle to pass through to the lower cap. From the inner ends of the two caps lugs project a suitable distance into the ends of the coiled spring, for the purpose of giving increased stiffness to the entire spring, by preventing the ends from collapsing and distributing the applied power over its whole length."

[Printed, 4d. No Drawings.]

A.D. 1860, August 9.—N° 1931. (* *)

NEUMANN, ANTON.—(*A communication from Franz Xavier Kientzle.*)—(*Provisional protection only.*)—"Improvements in the hanging and fastening of doors, lids, and other hinged covers."

"According to this invention it is proposed to apply a sliding rod or bar to each side or edge of a door or lid, such sliding rods or bars forming either the hinge piece of the door or lid, or the fastening of the same, according to the side on which the door or lid is opened. A handle is provided on each side of the

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“ door, by partially turning either of which the sliding rod corresponding therewith may be disconnected from the hinge sockets, and the door or lid consequently opened on that side, whilst the opposite bar or rod remaining engaged in the hinge sockets serves as the hinge upon which the door or lid turns.”

[Printed, 4d. No Drawings.]

A.D. 1860, September 27.—N^o 2344.

BROOKES, THOMAS, and ADAMS, THOMAS.—An improvement or improvements in the manufacture of the joints of “brooches and other similar dress fastenings.”

In reference to a brooch, “that part of the joint which is connected to the back of the brooch” is made “of two tongues cut from the sheet metal from which the back of the brooch is made, and in one piece with the said back.” Where it cannot be conveniently made thus, it is made of a separate piece of metal and then soldered to the back of the brooch. “The said tongues are afterwards bent into a tubular form.” That part of the joint which is connected to the pin is made from sheet metal in the following manner:—A blank is cut of a rectangular figure and about three times as wide, “the said blank being somewhat broader in one half of its length than in the other half. The narrow end of the blank is rolled up into a tubular form and constitutes the middle of the joint. The other part of the blank is doubled into a trough-like shape, and the pin being placed therein, the said part is closed upon the pin, which is held firmly therein. The top of the pin is bent at right angles before the blank is closed upon it, the bent portion constituting a stop which limits the motion of the joint. The joint is finished by passing a pin or axis through the two parts in the ordinary manner.”

Besides illustrating the above-described methods of constructing the said joints, the drawings to the Final Specification show a joint, for attaching to the back of brooches, in which the flat bar, connecting the two tongues or tubular parts together, is bent “so as to form a raised bar,” the said raised bar “forming the stop against which the pin bears to spring it into its catch.”

[Printed, 8d. Drawing.]

A.D. 1860, September 27.—N^o 2347.

JOHNSON, JOHN HENRY.—(*A communication from H. Petin Gaudet and Company.*)—“Improvements in forging and rolling

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“metals applicable to the manufacture of wheels, spades, shovels, axles, buffers, and other articles of wrought iron.”

The system of rolling to which this invention relates is applicable to the manufacture of door hinges.

The rolls are constructed according to the shape of the article to be produced and they “have a progressive alternating motion imparted to them.” A vibrating lever is “keyed on to a rocking shaft, which also carries a large spur wheel for transmitting its motion to the gearing of the rolls. The vibrating lever is actuated by a rotating crank and connecting rod, and the gradual progressive motion of the rolls is obtained by increasing gradually the throw or stroke of the vibrating lever. This may be accomplished by connecting the end of the connecting rod to a nut working on a screw spindle, which extends along the lever, and which is rotated a certain amount at each stroke by a pair of bevil wheels and a reversing pall and spur wheel, the direction of rotation of the screw depending upon the position of the pall.” The stroke of the lever is gradually altered according to the travel of the nut.

In making hinges for carriages and waggons, a plate or matrix, besides the rolls is used; it exactly corresponds to certain faces of the hinge. The upper roll carries a projection for forming a portion of the contour. A space in the knuckle may be formed by providing the matrix accordingly with a fixed piece. The hinge may be completed in the rolls, with the exception of the screw holes and of the hole for receiving the pin.

[Printed, 1s. Drawing.]

A.D. 1860, November 20.—N^o 2845.

NEWTON, ALFRED VINCENT.—(*A communication from George Bowen Pierson.*)—“An improvement in the construction of spring hinges.”

“This invention relates to a mode of increasing or diminishing, and of reversing, and even of neutralizing, the action of the springs of hinges, particularly those known as butt hinges.” “The object sought to be obtained is effected by holding the helical spring, which lies within the barrel of the hinge, at more or less tension, or leaving it perfectly slack, so that it shall not act. To this end the extremities of the coiled spring are inserted in caps which close respectively the upper and lower ends of the barrel. The lower cap is locked to the lower half of

“ the barrel, and the upper cap is locked to the leaf of the upper
 “ part of the hinge, either by means of a ring with a polygonal
 “ inner periphery taking on to a corresponding surface of the cap,
 “ and such ring being provided with a fork or clip to embrace the
 “ wing of the upper half of the hinge barrel, or by the cap being
 “ secured to that part of the hinge by a wedge, removable pin, or
 “ other locking attachment. The pintle passes through the axis
 “ of the hinge and through the caps to secure the two parts of
 “ the hinge together. By giving the upper cap, when raised from
 “ its seat, an axial movement after the end of the end of the spring
 “ has been applied thereto, and then locking it to the hinge, the
 “ spring may be slackened, or its power increased, as thought desir-
 “ able. The disengagement of the spring from the adjustable
 “ cap will prevent the spring from acting. The inner face of each
 “ cap is fitted with a projection for sustaining the ends of the
 “ spring and removing all tendency of the spring to collapse.”

The drawings show the above-mentioned points, also several modifications of the upper cap—notches and a sliding pin, holes and a pin lever, &c.—by which to rotate the cap and adjust the spring.

[Printed, 8d. Drawing.]

A.D. 1860, December 18.—N^o 3112.

CHESTERMAN, JAMES.—“ Improvements in door and gate
 “ springs, hinges, and centres, the improved springs being ap-
 “ plicable to other purposes for which springs are employed.”

This invention “ consists in the employment of levers, sliding or
 “ inclined planes, and eccentric cams, acted upon by one or other
 “ of certain improved forms of springs,” which constitute part
 “ of the invention. “ The improved springs are formed in some
 “ cases of flat twisted tempered steel plates or bands, and in other
 “ cases of flattened or twisted tempered steel wire suitably twisted
 “ or strained for the purpose.” The inventor applies “ such springs
 “ to doors, gates, and other like objects in such manner as to
 “ suspend the same thereby, and to cause them to retain given
 “ positions when not acted upon by any external force, and to
 “ return to them when any external force which has been applied
 “ to them is removed. By these means self-acting door and
 “ gate springs, hinges, and centres are produced.

The drawings represent various applications of the invention.
 In one case, twisted bands inserted in fixed studs form the spring

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to close a door opening in one direction only; one of the brackets holding a stud is fixed to the door post, the other to the door, the spring being in the same vertical line as the hinges; the power of this spring increases by the opening of the door. In another case, the interposition of a chain and eccentric lever between the spring fixed to the door post and the door, causes the power of the spring to be increased by the closing of the door. The spring box for folding doors contains the door spindle that is mounted with a double cam which acts, through a roller and lever, upon the twisted spring; in a modification of this plan, one or more bent plates take the place of the twisted spring. In another arrangement for folding doors, a roller projecting from the door spindle runs on a centred inclined plane and (by the opening of the door) compresses a helical spring or helical springs; "as soon as the door is released the parts return to their original position."

[Printed, 10d. Drawing.]

A.D. 1860, December 19.—N^o 3114.

SPENCE, WILLIAM.—(*A communication from Robert B. Donaldson.*)—(*Provisional protection only.*)—"Improvements in apparatus for closing doors and keeping them closed."

A lever, the fulcrum of which is an axle acted upon by a spring, is drawn by the said spring "into the position required to close the door, which is connected by means of a cord to the end of the lever furthest removed from the fulcrum. The form and arrangement of the lever are such that when it has been drawn by the spring acting on the axle into the position required to close the door, the leverage against the action of the spring is less than it is after the lever has been moved from that position so as to commence the opening of the door.

"The power of the spring on the axle is or may be regulated by means of a ratchet wheel on the axle and a retaining pall on the lever. The spring is enclosed in a box, through an aperture in which, and another in a casing plate, the journals of the axle are inserted, so as to afford suitable bearings for the axle.

"The lever is sometimes placed at the side of a grooved wheel or sector, so that the cord or chain may be passed from the lever on to the periphery of the wheel or sector, and vice versa,

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“ when required, and thus admit of a longer cord or chain being used than by the arrangement above described.

“ This modified form of the apparatus is intended to be enclosed in a round casing of suitable proportions.

“ The apparatus may also be combined with the casing of a fly door, in such a manner that by the aid of a suitable number of guiding pulleys for the cord or chain the door may be drawn from either side to its closed position, and there held with the required degree of force.”

[Printed, 4d. No Drawings.]

1861.

A.D. 1861, January 17.—N^o 130.

SPENCE, WILLIAM.—(*A communication from William Henry Van Gieson.*)—“ Improvements in machinery for making butt hinges.”

The following are the chief combinations and arrangements included in this invention :—

When the folder which commences to turn the joint is brought down upon the blank, the supporting bed yields, while the edge which is to be bent up in the formation of the joint is supported.

The turning of the joint is completed by means of a fixed stop, a reciprocating die and a sliding support under the blank.

The joint is perfected by means of files, the farthest edge of the hinge being supported by an overhanging stop.

The angular position of the hinge in relation to the files is adjusted by vibrating supports, set screws, and springs.

Fingers or slides move the blank forward to turn and finish the joint.

The said fingers are connected with the clutch lever so that an undue strain on the fingers stops the machine.

Guides and slides deliver the hinges from the jointing apparatus to the slides by which they are placed for driving the wires to connect the parts of the hinge.

The parts of the hinge are placed for driving the wire “ to connect them with the driving parts ” by means of slides.

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The combination with the said slides of a holding guide placed above them.

The apparatus for driving the wire is combined with supports separated by springs, so that the wire does not bend in driving.

If the wire resists the operation of driving, a stop, against which the hinge abuts, and connected with the driving clutch, stops the machine.

The application to hinge-making machines "of pliers or cutting nippers, and a chisel for cutting off and pointing the wire after the proper length has been driven into the hinge."

[Printed, 1s. 8d. Drawings.]

A.D. 1861, January 30.—N° 255.

CLARK, WILLIAM.—(*A communication from Charles François Alexis Arnaud.*)—(*Provisional protection only.*)—"Improved spring hinges."

"This invention relates to a new system of spring hinge for either double or single doors, opening to the right & left, by pushing and pulling, and closing automatically, the action being produced by an anterior spring in the sockets of the hinge, so that single or folding swing doors furnished with this invention may describe a circle of 360 degrees, instead of half a circumference, or 180 degrees only."

The plates of the hinge are furnished with hollow knuckles, and, for the axis, a cylindrical case is substituted; this case contains a helical spring, one end of which is fixed to one plate the other extremity to the other plate of the hinge. When the door is opened, the spring opens or closes to the extent of half a circumference: the resilience of the spring produces the automatic closing of the door.

In another case, applicable to a door that is required to describe a circle of 360 degrees, two cylindrical cases are applied end to end but separated by a collar. These cases form the joint pins of the two plates; one half of the helical spring within them is wound in one way, and the other half in the opposite direction. The spring being properly secured to the plates, also in the middle where its direction of winding alters, enables the door to perform an entire revolution to the right or to the left, when it is required so to do.

[Printed, 6d. Drawing.]

A.D. 1861, March 5.—N° 557.

HASELER, WILLIAM HAIR.—“Improvements in joints or hinges for jewellery and other articles having or admitting of metal joints or hinges”; also “improvements in the manner or means of suspending such articles by or with such joints or hinges.”

This invention “consists, in the first place, in making such joints or hinges of two or more rings or pieces of metal of any suitable shape, and attached, secured, or connected together by means of a tube or hollow rivet, constructed somewhat in the manner of a common eyelet hole. The connection thus formed is arranged in such a manner that the several parts may move or revolve one upon the other. The rings or pieces of which the hinge or joint is composed are soldered or otherwise attached to the separate parts of lockets, brooches, boxes, watch cases, or any other articles, and with the tubular or hollow rivet will form the joints or hinges, and the means of suspending such articles by or with such joints or hinges.

“The same principle of construction may be used in the manufacture of split rings, swivels, chains, or other articles to which the same may be applicable.”

In some cases, a double hinge joint is made by dividing the suspending loop, which is made thereby to secure two hinges.

The drawings show applications of this invention to the following articles:—Lockets, locket watch-keys, watch cases, breast pins, watch-hooks, key rings, swivels, chains, and brooch-joints and fastenings.

[Printed, 10d. Drawing.]

A.D. 1861, March 30.—N° 790.

SUTTON, DANIEL.—“Improvements in apparatus for hanging gates.”

“This invention consists in a certain combination of apparatus used when hanging a gate in order that such gate may at all times tend to close and stand closed after being opened.”

The Drawings represent an apparatus at the lower part of a gate. Two rollers revolve on vertical axes attached to a projection fixed to the gate: they rest against a “track” that is fixed to the gate post, the track being curved in the horizontal plane. On the curved track is an upright axis on which the gate swings by

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means of a bolt which slides through the gate. A gate thus hung will, on being opened, as one of the rollers "moves along the " curved track, cause the gate assume such a position " that when the gate is released, its weight will cause the roller to pass back along the inclined track " to its original position, and " so remain till again forced open."

When this apparatus is used at the upper part of the gate, the curved track is raised in the vertical plane, and is traversed by a single wheel on a horizontal axis attached to the gate. The track is "lowest at the middle, so that when opening a gate " in either direction the wheel will move on and rise up from " the lowest position to the higher part of the curved incline, so " that when the gate is released it will by its weight cause the " wheel to move to the lowest part of the curved incline."

[Printed, 6d. Drawing.]

A.D. 1861, April 12.—N° 901.

HASELER, GEORGE CARTER.—(*Provisional protection only.*)—
"Improvements in the joints on hinges of lockets."

This invention "consists of the application of two parallel " joints or hinges acting side by side and in conjunction. The " centre parts on he " [the?] "joints of such hinges being soldered or otherwise connected together, to which centre parts on " he " [the?] "joints a ring or loop may be attached by which " the locket may be suspended."

The drawings show a locket, made according to this invention, complete and shut; also the several parts of the locket when separated.

[Printed, 6d. Drawing.]

A.D. 1861, June 8.—N° 1455.

WHINES, JOHN.—"Improvements in double-action box spring " hinges for swing doors."

"The spring hinges are constructed with a circular disc in " which is mounted a pair of rollers working on a circular double " incline descending plane or disc kept in contact with the pair " of rollers by a spiral " [helical?] "spring. The disc with " rollers has a horizontal reciprocating motion imparted thereto " by the action of the door, to the bottom of which is attached " a metal shoe with centre pin and lever arm carrying a roller,

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“ which takes hold of a cam secured to disc with rollers, and working on a stud or pin. The descending inclined plane or disc is formed with a projecting lug on each side to work in vertical slots in metal box.”

[Printed, 6d. Drawing.]

A.D. 1861, June 27.—N^o 1644.

COULTER, HENRY.—(*A communication from John Oliver Blythe.*)—(*Provisional protection only.*)—“ Improvements in door springs.”

“ This invention relates to an improved arrangement of mechanism constituting a door spring possessing the properties of more uniform resistance, and also of keeping a door either partially or entirely open or closed, as desired. To effect this I employ a casting of metal having a long slot or opening formed through the face thereof, in which is fitted a bent lever or arm connected thereto by a pin, which is the fulcrum thereof; the back of this lever is formed of a cam shape at one end, and the opposite end of said lever is cranked or bent downwards, such bent part being intended to fit in a long slot or mortice made in the top edge of a door; the casting containing the aforesaid lever or arm is fitted into the top part of the frame-work (to which the door is hinged), and flush therewith on the face, so that when the door is closed the aforesaid bent lever is concealed in the slot in the casting and mortice in the top edge of the door. To the back of the aforesaid casting I affix a long flat wedge-shaped steel spring, the thinner part of which presses upon the edge of the before-mentioned cam of the aforesaid bent lever, and thus presses this shorter arm of the lever outwards, and the other arm, which is considerably longer inwards, and thus the door may be kept closed; but upon opening the door, say, half way, for example, the highest point of the cam having been brought at right angles to the flat spring against which the cam presses, as before-mentioned, the door will be kept open, and can only be allowed to close by pushing or pulling the door inwards.”

[Printed, 4d. No Drawings.]

A.D. 1861, November 4.—N^o 2770.

WESTON, WILLIAM THOMAS.—“ An improved spring and fastening, applicable to gates, doors, and other useful purposes.”

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This invention "consists in the application of a fastening to a straight rod or bar of hardened and tempered steel, thereby to twist or turn it so as to form a spiral" [helix?], "in order that in the continual effort to regain its natural position, it may exert an action or force analogous to that exercised by springs of some other different constructions."

In the application of this invention to doors and gates, the length of the said bar is equal to the distance between the top and bottom hinges. One end of the bar is fixed to the door jamb near the top hinge, the other end is fixed into a small spindle furnished with holes and mounted in a bracket attached to the door near the lower hinge. To preserve the bar in the desired degree of twist, a clutch upon the socket bears upon a projection of the bracket. "A bracket may be placed between the top and bottom brackets to strengthen or steady the action of the steel rod when it is of an extra length."

The drawings show an example in which a socket and clutch is used to twist the rod. In another instance a lever or "swing clutch" bears up against the door jamb.

"The rod has to be twisted in a direction away from the door when it is desired to keep the same closed, but when it is desired to keep the door open the moveable socket is so arranged that when the rod is twisted in the reverse direction it shall be so retained by the clutch and bracket."

[Printed, 6d. Drawing.]

A.D. 1861, November 5.—N^o 2779.

BOWRA, EDWARD.—"Improvements in the manufacture of elastic fabrics."

1st. Certain proportions of masticated india-rubber, or other elastic gum, chloride of sulphur, and dry "hypochlorate" of lime are well mixed at 60° Fahrenheit, and then rolled into sheets with cold rollers. To these sheets when elongated, sheets of fabric are applied; when the two have firmly adhered they are placed in a chamber heated to 100° Fahrenheit.

2nd. A similar process is used for solid india-rubber or other elastic gum; these are either rolled into sheets or blocks, or made into articles and submitted to heat as above.

3rd. Canvas or other cloths are prepared with a solution of *india-rubber* or other elastic gum; the said cloths are covered with

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a compound or mixture of elastic gums, with the cuttings or refuse of leather, waste vulcanized india-rubber, mineral tar, chalk, and oxide of zinc, well ground in with vegetable or other fibres; chloride of sulphur and "hypochlorate" of lime are then added, with colors or otherwise, and cold rolling is applied. A lasting and elastic floor cloth may be thus obtained; it is finished by being submitted to 100° of Fahrenheit for two hours or more.

4th. To perforate and corrugate the said cloths, they are rolled between curing sheets that have suitably-placed pins or metallic devices, and are submitted to heat as above.

This invention is alluded to in No. 4 of the year 1863, *post*.

[Printed, 4d. No Drawings.]

A.D. 1861, November 13.—N° 2853.

ROLLAND, LOUIS.—(*Provisional protection only*).—"An improved spring door shutter with a moveable lever."

"The invention consists in setting a stiff metallic wire along the frame of doors a little behind and parallel to the line of hinges, and extending about the whole height of said doors; the upper end of the wire is pinched in a little socket fixed to the frame, while the lower end running freely in another guiding socket is pinched below by a small cap carrying a hinged lever, which lever can be brought at pleasure in a horizontal or vertical position; in the first case, bearing against the door it shuts it by the springy action of the wire; in the second case, standing up against the frame it has no action on the door, which can remain open or be shut by hand."

[Printed, 4d. No Drawings.]

A.D. 1861, December 10.—N° 3092.

STANLEY, WILLIAM FORD.—(*Provisional protection only*).—

"The use of aluminium for the construction of mathematical instruments used for geometrical drawing, surveying, and nautical purposes, and improvements connected therewith."

"The metal aluminium or its alloys is to be used as a material for making all or such parts of mathematical instruments as the construction may be suited for. By the term mathematical instruments, I intend any instrument to measure mathematically levels, altitudes, circles, bearings, and lines, or an instrument

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“ to set out or draw the same on land, chart, or paper, technically known as theodolites, levels, circumferenters, sextants, quadrants, mining dials, magnetic and prismatic compasses, drawing compasses of all kinds, scales and rules, or any other instrument used to measure mathematically, by whatever name it may be called. Improvement in the construction of sector and knee joints used in mathematical instruments, in this case rendered necessary by the softness of aluminium, is to make the centre plate of thin steel fixed to what is technically called the head side of joint, and to have a steel washer loose between each of the other parts of the joint where the two surfaces of aluminium would otherwise come in contact. This improvement is claimed if applied to other metals.”

[Printed, 4d. No Drawings.]

A.D. 1861, December 13.—N^o 3125.

BRAMPTON, FREDERICK.—(*Provisional protection only.*)—

“ An improvement or improvements in the manufacture of the middle joints of measuring rules.”

“ In the middle joints of measuring rules, as ordinarily constructed, one side of the joint consists of a circular disc of brass and a flap or plate of about one-half the thickness of the said disc. The whole of the said side is made from one piece of sheet metal of the thickness of the disc, the thickness of the side being reduced by turning or cutting away the metal at that part.

“ My invention consists in making the said side of sheet metal of the thickness of the flap or plate, and making the disc in the following manner:—The blank is cut out in the usual way excepting that the disc is a little larger than the finished disc is required to be. By means of raising tools the edge of the disc is raised into a plane at right angles to the other part, and there is thus formed a rim of a depth somewhat greater than the thickness required in the finished disc. A disc of zinc or iron or other hard and cheap metal or alloy is placed within the said rim, and fixed therein by means of closing tools. The side is finished in the ordinary way, and the joint made therewith has the appearance in the finished rule of a joint made wholly of brass. Joints made according to my invention are less costly than joints made in the ordinary

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"manner. The tools which I employ resemble those ordinarily employed for like purposes."

[Printed, 4s. No Drawings.]

1862.

A.D. 1862, February 25.—N^o 509.

IMRAY, JOHN.—"Improvements in hinges."

1st. These improvements apply "to a mode of constructing cast-iron hinges, of the kind commonly known as Collinge's, or spherical hinges; the joint of such a hinge ordinarily consists of a wrought-iron or steel ball-ended pivot, which is fixed tightly in the knuckle, the ball end of the pivot being made true and smooth, so as to turn freely in a cup which forms the step of the hinge, but instead of making the pivot a separate piece from the knuckle and fixing it therein," the inventor chills the pivot in one piece with the knuckle, and afterwards renders it smooth "by scouring it with emery or other suitable polishing material."

2nd. These improvements apply to the construction of spring hinges and the shoes, centres, or hangings used in connection therewith."

The floor box containing the spring mechanism is situated immediately beneath the heel of the door. A shoe, attached to the heel of the door carries with it a lever, which is pivoted on a bracket in the floor box; the underneath part of the lever is slotted radially. Another lever, eccentrically mounted in respect to the slotted lever, is in direct connection with a volute spring. A roller on the eccentric lever works in the slot of the first-mentioned lever, and enables the spring to be wound up by the opening of the door. When the door is opened in one direction, the movement of the spindle of the spring winds it up; but when the door is opened in the other direction, the movement of the spring box winds up the spring.

The shoes to receive the top and bottom bearings of the door respectively, have covering pieces shaped to suit the back edge of the door. On the removal of these covering pieces, the door can be drawn away horizontally.

[Printed, 8s. Drawing.]

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A.D. 1862, March 15.—N° 717.

McADAM, WILLIAM.—“Improvements in the manufacture of blocks, pulleys, and weights for window sashes and other purposes, and in the mode of applying the same.”

The said weights “may be applied to a variety of useful purposes, as for example, weights for shutters, doors, machinery, gasaliers, clocks, timekeepers and other uses.”

This invention “relates to the application of clay or other suitable mineral substance; either in the form of earthenware or glass, to the manufacture of blocks, pulleys, and weights, and which have hitherto been manufactured of metal.”

“Instead of using iron or other metal for weights, it is preferred to make them of the heavier kinds of earthenware. These weights are either moulded solid, or with an internal cavity to be filled with ‘mine dust’ or other suitable mineral substance, or which may be mixed with the clay for the purpose of increasing the specific gravity of the weights. Other mineral substances, such as stone of various kinds, the cheaper varieties of marble may also in some cases be employed with advantage in the manufacture of these weights, or they may be made of glass if preferred.”

In some cases, the said weights may be made of “slag, iron pyrites, asphalte, pitch, and other similar materials, used in combination with forge, furnace, and other slags, broken earthenware or glass, granite, quartz, ironstone, and other suitable mineral substances. These weights may also be made with an outer shell or casing, formed of earthenware, metal, wood or other suitable material, and with the interior filled with any of the minerals before enumerated best adapted for the object in view.”

The drawings show a mode of hanging window sashes with the aid of the improved pulleys and weights.

[Printed, 10d. Drawing.]

A.D. 1862, April 30.—N° 1269.

DAVIES, GEORGE.—(*A communication from Ernest Lambert*).—“Improvements in the manufacture of nails, screws, and other analogous articles in malleable cast iron.”

“This invention relates to the application of malleable cast iron, to the manufacture of various nails for boots and shoes,

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“ and of other analogous articles of nailery or ironmongery, such
“ as screws, tenter, and other hooks, rings, hinges, and other similar
“ articles. These articles, cast directly or otherwise in malleable
“ iron by the ordinary process, are nevertheless not liable to be
“ broken by a small blow, and are capable of numerous applica-
“ tions in trade.”

“ For some uses (for marine purposes, for example,) the nails
“ or other articles of ironmongery may be covered with some
“ suitable metal, such as zinc, lead, or copper, so as to prevent
“ their liability to deterioration.”

The drawings show a gate hinge constructed according to this invention, in which the cylindrical pivot is at right angles to the face or flap.

[Printed, 16d. Drawing.]

A.D. 1862, July 19.—N° 3053.

BROWN, ANDREW BETTS.—“Improvements in steam engines
“ and boilers.”

1st. “An expansion valve applicable to engines with or with-
“ out link motions.”

2nd. “An apparatus by which the feed water is heated before
“ entering the boiler, applicable to all boilers having waste-heat
“ chambers or smoke boxes.” Use is made “of an annular space
“ completely encircling the waste-heat chamber or smoke box,
“ and also a double shell or casing in the door or front of such
“ waste-heat chambers or smoke boxes, and connected by stuff-
“ ing-box tubular hinges to the annular casing.” A Giffard’s
patent injector, or an ordinary force pump, injects or pumps water
into this apparatus by one of the hinges of the door. “The
“ feeder circulates through the door or front of the hot-air or
“ waste-heat chamber and passes out through the other hinge into
“ the annular casing, and after circulating through it passes into
“ the boiler by a check valve connecting the annular casing with
“ the tube plate of the boiler. In the above arrangement a pump
“ may be substituted for Giffard’s patent injector, but the prin-
“ cipal object of this heater is to overcome the main objection to
“ Giffard’s injector, namely, its incapability of injecting boiling
“ water.”

[Printed, 16d. Drawing.]

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A.D. 1862, September 25.—N° 2618.

LEA, WILLIAM.—“Improvements in hinges for French casements.”

“The object of my invention is to enable French casements to be held open at any extent required for the admission of air or otherwise.”

“My invention consists in securing to the back of one flap of the hinge by means of a pin one end of a quadrant carried through an aperture in the flap itself; the other end of the quadrant passes through another aperture in the other flap of the hinge. At the back of the second flap, free to move on a pin, I fit a rod or lever, which projects beyond the flap, and which is armed with a tongue or catch. Notches or holes are made in the quadrant, and on bringing down the lever so as to engage the catch into one or other of the notches or holes the casement is retained open to the extent allowed by the particular notch or hole engaged until the catch is released.”

“Instead of notches I sometimes form holes in the quadrant, and cause a screw or spring stud fitted to the second hinge flap to engage into one or other of the holes.”

[Printed, *8d.* Drawing.]

A.D. 1862, October 21.—N° 2829.

TUCKER, WALTER HENRY.—(*Provisional protection only.*) “Improvements in self-closing apparatus for doors.”

1st. “Particular modes of applying weights to doors so as to make such doors self-closing.”—An upright screw shaft, having one or more threads of great pitch, is concealed in the floor or in a recess behind the door post, and is firmly fixed to the seat of a frame or case. A movable nut is used in connection with the screw shaft, it (the nut) is “so formed externally that it can be either directly or indirectly acted on by a piece connected with the door, so as to be caused to rise upon the shaft.” Either the nut is itself a weight or it is connected with a separate weight, and the opening of the door, in either direction, is made to raise the nut. The weight tends to carry the nut down again, and, consequently, when the door is released, it is closed by the descent of the nut.

A modification consists of connecting the screw with the door so as to move with it. In this case, where the door is required to

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open in both directions, the nut has an outer screw as well as an inner screw, "the two threads running in opposite directions to each other;" the inner thread is acted on by the screw, the outer thread works in conjunction with a second or external screw nut, to which the weight is attached.

2nd. "The application to self-closing doors of peculiarly constructed hinges."—The stationary joints of these hinges are fixed to the centre of the plate which is commonly screwed to the door post, and the movable joints to the edge of another plate which is mortised in or otherwise connected to the back edge of the door." By this arrangement the doors can be opened in either direction freely, and the weight of the door is well sustained.

[Printed, 4d. No Drawings.]

A.D. 1862, December 8.—N° 3290.

HILLIAR, JOHN.—"Improvements in hinges, joints, or connections, and in applying them, parts of which improvements may also be employed for constructive and decorative purposes."

For the said purposes, "oval or other suitable-shaped tubes" are employed, these tubes "having an opening or slit from end to end. This joint, hinge, or connection is applicable to folding ventilators, to packing boxes, cases, and wire baskets; also to general goods manufactured from sheet wire, tin plate, zinc, iron, and other metals, glass and woodwork, canvas, paper, or other like materials."

This invention is accomplished by taking, "say, two sheets or folds of wire gauze or other suitable material; the edges intended to be joined or attached to be folded over, or a beading or rod turned, soldered, sewn, screwed, or otherwise fixed or made or attached to such edges, so as to make each edge of greater thickness than the other part of sheet plate or board; then taking two sheets and laying them upon each other, the folded or beaded edges being to the outsides, by passing the beaded or folded edges into an oval or other suitably-shaped tube by the end, the sheets, plates, or boards passing through the slit or open joint; such sheets are secured together, the beadings preventing the edges from slipping through the slit, and a hinge, joint, or connection is thus formed, which can be

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“ regulated to hold fixedly and firmly, or to allow full and free
“ action as a loose hinge or joint by opening or closing the slit
“ in the tube or by using a larger or smaller tube.”

[Printed, 8d. Drawing.]

1863.

A.D. 1863, January 1.—N° 4.

BOWRA, MATTHIAS EDWARD, and FRANCIS, ARTHUR EDWARD.—“ Improvements in the manufacture of elastic fabrics.

1st. Causing sheets of any suitable elastic gum to be distended upon convenient frames “ in which the said sheets are prevented
“ from contracting crosswise, at the same time that they are distended lengthwise, and vice versa.” Whilst the sheets are in this condition, the fabric to be combined therewith being distended lengthwise, but allowed to contract crosswise, is caused to adhere firmly thereto by means of an elastic and adhesive solution, and by the use of rollers. When the said sheets have been thus treated, “ the combined materials are released from their tension
“ and allowed to contract. By this means a fabric is produced
“ possessing elasticity in all directions.”

2nd. The fabric is distended lengthwise and thus caused to contract crosswise, and when in this state, is covered with a coating of india-rubber, the coating being caused to adhere firmly to the fabric by spreading machines, rollers, or other suitable means. The resulting fabric possesses elasticity in a crosswise direction.

When required, the said combined materials may either be ventilated and vulcanized in the ordinary manner, or as described in No. 2779 (A.D. 1861). The said articles may be previously printed, impressed, or otherwise ornamented.

The above-described elastic fabrics may be applied, amongst other purposes, for the springs of doors or windows.

[Printed, 4d. No Drawings.]

A.D. 1863, February 14.—N° 413.

JOHNSON, JOHN HENRY. — (*A communication from Louis Pierre Vincent, Etienne Eugene Jacquemin, Jean Charles Douriez, and Gustav Joseph Legros.*)—“ Improvements in wrought-iron

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“ casements, and in the means for fastening the same, which improvements are also partly applicable to the framework of glass doors, conservatories, and similar structures.”

A part of these improvements relates to the hinging of each sash of the said casements to the frame, which is also applicable to glass doors. Tubular sockets are screwed to the sash “ which drop on to hinge pins in the frame; a hinged piece above, capable of being turned up when required, serving to lock the sockets down upon the pins, or to release them when the sash is to be lifted off its hinges. The bottom bar of the sash is connected with the vertical bars by a mortise-and-tennan joint, and a somewhat similar plan is adopted in the upper bar, which plan is also used for the intermediate bars.”

The drawings show the sash hung to the upright of the sash frame by two hinges screwed to the upright of the sash, which is sunk to receive the thickness of the hinge plate. The pivot or pin is fixed in a stem in the sash frame. Above the hinge there is a loose piece jointed to the sash frame, so that when this piece is in a horizontal position or open, the sash is free to be lifted off or placed upon its hinges. The sash having been adjusted or removed, the loose piece is closed down again. Each hinge is constructed in the manner above described.

[Printed, 10d. Drawing.]

A.D. 1863, May 5.—N^o 1126.

COCHRAN, SAMUEL BEACH.—“ Improvements in sewing machines and in the apparatus connected therewith.”

1st. “ A peculiar construction and arrangement of sewing machine for producing the ‘lock’ or shuttle stitch.”

2nd. An arrangement of “the tension apparatus for the needle thread,” and other details of sewing machines.

3rd. “ A mode of driving or actuating sewing machines.”

4th. Making “the hinges for the covers of sewing machines in such a manner that they may be separated, and the cover removed when opened to a certain given extent only. For this purpose one part of the hinge is made cylindrical, and fits into a box or chamber in the other part. The cylindrical part is slotted, and the hinge pin passes through the slot and through the box or chamber, into which it is rivetted at each end. When the hinge is turned to a given angle (say 45°) the cylindrical

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“ part can be drawn off the pin, but in all other positions it remains fixed thereon, being held by the sides of the box or chamber in conjunction with the pin.”

5th. “A binder, which is made self-adjusting to suit various thicknesses of material, whilst it is also capable of adjustment to suit different widths of binding. The galloon, tape, or other binding material is held by an upper and lower hook in combination with a spring or hinged plate, which is acted upon by the ordinary presser foot, or may itself act as a presser foot in holding the material down,” in which latter case a screw is preferred “for giving the requisite degree of pressure.”

“When a hinge joint is used,” a spring will be required to keep the plate elevated “when not pressed down by the presser foot, in order to facilitate the introduction of the work.”

[Printed, 1s. 4d. Drawings.]

A.D. 1863, May 22.—N^o 1282.

SNELL, WILLIAM.—(*A communication from William Henry Hayes.*)—“Improvements in butt hinges.”

“This invention relates to certain improvements in that class of butt hinges wherein a spiral” [helical?] “spring is introduced within the eye of the hinge for the purpose of either opening or closing a door, gate, or shutter, etc., to which the hinges may be affixed.

“It consists, firstly, in the introduction within the hollow eye of the hinge of a hollow stem or cylinder, which is intended to receive within it a spiral spring, and which is also intended to serve as an axis or bearing for the eyes of a sectional eyed hinge.”

“Secondly, in the employment of bifurcated lugs, for the purpose of securely holding the ends of the spiral spring and keeping said spring in its place within the hollow stem or cylinder.”

The drawings show a hinge of the above description, in which the said spring has its ends bent diametrically, so that each end may enter into its particular lug. Each end of the spring is passed between the bifurcations of its lug and is thereby substantially held in its place. The upper lug is in the lower part of the cap that is fixed to one leaf or flap of the hinge; the lower lug is in the upper part of the other cap, which is at the lower part of the eye of the hinge and is fixed to the other flap. The upper cap is

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fitted into its flap by a set or adjusting pin; according to the position of this pin in one or other of the radial perforations of the cap, so is the reactive force of the spring. An annular groove, with pins, which are tapped through the eye of the flap, keeps the cap from being forced out of the eye by the spring. A lever and perforations in the neck of the upper cap, enable the strength of the spring to be adjusted and "increased to any desired degree."

[Printed, 8d. Drawing.]

A.D. 1863, July 2.—N° 1651.

KING, JOHN.—"Improvements in fencing land and in hanging gates."

"The improvements in hanging gates consist in improved gate hooks and gate hinges. The first improvement in gate hooks consists in making them adjustable so that the hook can be set at any required distance from the post; this is done by making the hook upon a stem having a screw thread upon it, upon which two nuts work; one nut comes on one side and the other on the other side of the post; the hook can thus be set at any distance from the post and can also be set at any angle to it. A gate hinge can also be made in the same manner. When two pairs of gate hooks and gate hinges such as above described, are used in setting up a gate the gate can be both raised or lowered and also lengthened and shortened."

A gate hook may be constructed in two parts, "one part composed of the hook formed on a rod or stem and the other part composed of a tube which is to be fixed in the post." By means of a notched disc on the stem of the hook, the hook can be set and retained at any angle. A nut prevents the stem from being drawn out of the tube.

"The ring or hinge to work with a hook" of a rounded form is made circular in section; "by this means the friction between the hinge and the hook will be considerably diminished; the gate can also be set to work at an angle without increasing the friction."

[Printed, 8d. Drawing.]

A.D. 1863, July 7.—N° 1689.

ROBINSON, SAMUEL.—"Improvements in spring hinges for swing doors."

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“The lower pin or pivot which supports the door and upon which the door turns, has fixed upon it an elliptical projection, the pin or pivot being in the centre of the ellipse. Against the elliptical projection a roller carried by a slide is constantly pressed forward by means of springs. When the door is closed the roller rests against a flat side of the ellipse, so that the roller is at its nearest point to the pin or pivot on which the door turns, and at this point a notch is formed in the elliptical projection into which the roller enters and thus retains the door closed. When, however, the door is pushed either way the roller will be forced back out of the notch, and as the door is still further turned on its pivot the roller will be forced further back by the portions of the ellipse that are further from the pin or pivot of the door coming against it. When the door is released, the roller being pressed forward against the curved projection causes the door to swing back until the roller enters the notch in the projection, the lower pin or pivot upon which the door turns and the projection upon it is received into a case that is to be let into the floor; this case also contains the roller and slide that carries it, and also the springs that press the slide forward. It is not essential that the projection on the pivot of the door should be elliptical, as it may be made of other shape, and still work in the same manner.”

[Printed, 8d. Drawing.]

A.D. 1863, September 16.—N^o 2269.

WATSON, ALFRED.—“An improvement in hinges.”

“My invention refers to those hinges in which eyes on two separate parts are traversed and held together by a pin or stud, upon which the said eyes turn in order that the article to which the hinge is applied may be opened and closed.

“My invention consists in fixing the pin or stud in one eye, or one set of eyes, and in forming a slot or elongated aperture in the other eye, or set of eyes, to enable one part of the article to which the hinge is applied to be pushed or slid over or beyond the other part, and that to an extent limited by the length of the slot in one of the eyes or sets of eyes.”

The drawings show the hinge of a frame for a bag constructed according to this invention. Other isolated examples of hinges are also shown.

[Printed, 8d. Drawing.]

A.D. 1863, November 30.—N° 2996.

THOMPSON, GEORGE APDAIL, the elder, THOMPSON, GEORGE APDAIL, the younger, and LATHAM, JOHN.—“Improvements in the manufacture of door springs, part of which said improvements are applicable to the manufacture of weighing machines, steelyards, scale beams, and other articles of the like nature.”

1st. A “single-action box-arm spring.”—A hollow metal arm contains the helical spring, and at its extremity has a friction roller which works upon a plate attached to the door. The roller works in a groove in the plate, the groove being deepest at the end nearest the box, and gradually decreasing in depth outwards until it is flush with the plate. The arm is attached to a box into which projects the rod of the spring; the rod has “a double loose joint, on which a friction roller works.” To the back plate is secured a “semicircular plate working upon its axis inside the box.” On opening the door the friction roller travels up the semicircular incline; the strength of the spring decreases as the door opens.

2nd. Double-action door spring.—Two curved arms work upon a pin at the bottom of a rectangular box, they are kept “in an outward position by means of two pairs of links with friction rollers, acted upon by two rods carrying coiled springs.” Upon the pin, above the arms, works a plate having its edge turned down to catch a pin upon each of the arms. The plate also carries the pin which is attached to the door, and which works through a curved slot in the top plate of the box. When the door is opened in either direction, the movable plate carries one of the curved arms with it, “and thus encounters the opposing force of one of the coiled springs, the force diminishing as the door is opened.”

[Printed, 8d. Drawing.]

1864.

A.D. 1864, January 25.—N° 209.

MCKENZIE, ALEXANDER.—(*Provisional protection only.*)—“An improved hinge for the heads of barouches, landaus, and other carriages.”

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“The object of this invention is to enable the joint of the hinge to be brought as far forwards as possible, so that when the head is folded back the front part of the ‘pillar top’ in a landau (or of the front frame of the head of a barouche or other carriage) shall not project above the top of the hinge, and also to dispense with the necessity for bringing the top flap of the hinge in front of the woodwork, in order to save both time and expense in the fitting of the same, and to improve the appearance thereof.

“In carrying out this invention I construct the lower part of the hinge of such a form as to throw the joint of the hinge as far forwards as possible, and I form the upper flap of the hinge with a crank or elbow curved or bent backwards in such a manner as to bring the same to the back of the ‘pillar top’ or woodwork, and I fasten the upper flap of the hinge to the latter by screwing it on from behind. By these means the joint is made almost invisible, the front woodwork of the head does not project above the hinge when the head is folded back, and the flap of the hinge, instead of being screwed in front of the woodwork, where it is unsightly and requires very careful fitting in order to allow the window or blind to slide up and down freely, is hid away entirely out of sight behind the woodwork, where it does not require such careful fitting.”

[Printed, 4d. No Drawings.]

A.D. 1864, February 2.—N^o 275.

MARTINEAU, FRANCIS EDGAR.—“Improvements in the hooks and plates of hook hinges.”

According to one plan, a right-angled bracket is formed of a bar of iron flattened out at one end, or a plate of uniform thickness may be used; the hook or axis is passed through a hole in the bracket. The hook (a cylindrical rod of iron) may be either welded into the bracket or left unwelded. “A portion of the rod extending below the bracket is flattened and expanded at its end, the portion of the rod between the flattened end and the bracket being bent so as to bring the flattened end into the same plane as that in which the plate is situated. The flattened end of the hook or axis has holes through which screws or nails can be passed for attaching the said hook or axis to the gate post or door frame to which the plate is attached. Or I make the plate of a piece of iron of the width

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“ and thickness which the finished plate is intended to have,
“ and by folding or doubling and welding a portion of the plate
“ near its lower end I make a bracket at right angles to the
“ plate, the said bracket having double the thickness of the other
“ portion of the plate. The hook or axis is passed through and
“ may be welded in a hole in the bracket, and the lower end of
“ the hook or axis may be welded to that portion of the plate
“ below the bracket.”

The drawings show several illustrations of this invention, according to the above description. The hook is either supported on the plate of the hinge, or on a separate plate, and the plates of the said hinges (through which their respective hooks pass) are made in the form of brackets. Hooks welded into the bracket are also shown.

[Printed, 1s. Drawings.]

A.D. 1864, April 13.—No 930.

STOCKER, ALEXANDER SOUTHWOOD, GOLD, RICHARD, and STOCKER, ALEXANDER RICHMOND.—(*Provisional protection not allowed.*)—“Improvements in the manufacture of hinges, & in part of the machinery, apparatus, & tools to be employed therein.”

“Our improvements consist in constructing circular or other shaped wheels or instruments with their edges & surfaces arranged in such manner as to have drawing, cutting, grinding, or filing surfaces thereon, for the purpose of finishing more conveniently than the present mode adopted the knuckles or joints of hinges, such circular or other shaped wheels or instruments being worked by desirable machinery to be employed for that purpose. Also, in the construction, manufacture, & employment of certain tools to be used in the manufacture of such or other hinges.”

[Printed, 4d. No Drawings.]

A.D. 1864, April 15.—No 948.

OVENDEN, WILLIAM, the elder, and OVENDEN, WILLIAM, the younger.—“Certain mechanical arrangements to be applied to doors and casement windows to prevent slamming or clapping.”

To the door frame, or in any other fixed position that may be required, the end of a piston rod is attached. The piston rod

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is in connection with a barrel that is filled with a liquid oil or with a mixture of lard and oil, and that is attached to the door. The barrel is closed by a cap, and has interior "relieving passages" in order to permit the above-named oils or oil and lard to flow "more readily." The piston is also furnished with a passage which is closed by a valve opening inwards or outwards according to the side of the door to which the apparatus is to be applied.

When this apparatus "is to be used with air," its piston is composed of leather "tightly pressed against the inside of the barrel by means of a spring ring of steel or brass wire; the valve, however, may be made the same as when the oil or oil and lard is used."

[Printed, 8d. Drawing.]

A.D. 1864, April 28.—N° 1069. (* *)

NOTMAN, ALEXANDER.—"Improvements in hinges for ships' ports, skylights, and other purposes." "Hitherto in fitting ports to ships, especially in circular parts, great difficulty has been experienced in setting the hinges carrying the ports at corresponding angles."

This invention consists "in the construction of a hinge capable of being set at any required angle. I make the strap of the hinge in a piece with or connect it to a ball, which may be solid or hollow. The ball works in a socket formed by jaws, which I prefer to cast on to the knuckle or hinge plate, but they may be rivetted or secured in any other approved manner. The knuckle or hinge plate is secured to the place where the hinge is to be attached, to a ship's side or stern for example."

The invention may be applied with equal facility to other purposes where hinges are used.

[Printed, 10d. Drawing.]

A.D. 1864, August 2.—N° 1915.

NEWBY, THOMAS, and SMITH, CHARLES.—(*Provisional protection only.*)—"Improvements in self-closing doors and gates."

This invention "consists of a curved, single, or double inclined plane made of suitable material, fixed to the ground or floor under the door or gate, so that the plane or planes incline from the door or gate when closed, and radiate from the hinges thereof, the door or gate being opened in either direction, ascends one of the inclined planes, and the gravity of the door

“ or gate will bring it back again into its normal position. The door or gate is provided with a roller to lessen the friction between the door or gate and the said plane or planes. Doors swinging both ways may be provided with flaps or slides, made to rise and fall with the door, so as to close or cover the opening left over the door to allow for the rise of the same when caused to ascend the inclined plane as before mentioned.”

Where a door is required to swing one way only, the inventors can prevent there being any inconvenient opening over the door by bevelling the top of the same,” and this they “prefer to do by beginning at the face of the door at the end opposite to where the door is hung, gradually bevelling it to a more acute angle as the bevelling approaches the hinges.”

[Printed, 4d. No Drawings.]

A.D. 1864, October 3.—N° 2426.

GEDGE, WILLIAM EDWARD.—(*A communication from François Goday.*)—(*Provisional protection only.*)—“Improvements in the manufacture of hinges.”

This invention relates to hinges for jealousies, and shop and other window shutters.

“ This invention consists in the substitution of subdivisions by half turns or knuckles made of one single piece to subdivisions of knuckles of two pieces soldered together. To obtain this result, the first operation consists in cutting to the desired length the plate or band of iron intended to make what is called a knuckle joint, and after the ordinary preparation folding or doubling this plate back exactly on itself. The difference between the actual method and that of this invention consists in that in this latter the iron plate or band having been folded in the centre the piece is complete in all its parts without the necessity of soldering or welding a supplementary appendage to it. When the knuckle joint has received this first preparation it presents as near as may be the shape of a parallelogram, which is then hollowed out in a suitable manner from the join and brought to the desired shape and appearance by means of a cutting press or stamping machine. It is with these knuckles adjusted and united together in a greater or lesser number according to requirement that the hinge or joint is formed. It will be understood that by the same

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“ process and with equal facility hinges of small medium or large
“ size are made with neck more or less developed as may be
“ required.”

[Printed, 4d. No Drawings.]

1865.

A.D. 1865, May 13.—N° 1335.

CLARK, WILLIAM.—(*A communication from Jean Baptiste Evrard and Jean Pierre Boyer.*)—“Improvements in machinery for the
“ manufacture of hinges.”

A self-acting apparatus for the manufacture of hinges consists of a foundation plate or frame, a driving shaft, punches, folders, stampers, feeders, and delivery springs and rods. The driving shaft carries cams, which, by means of cam levers, act on the plate feeders, cutters, stampers, and the feeder of the wire joint pins. The strips are fed to the centre of the machine by means of a vibrating carriage, upon which certain blades are mounted; these blades are kept constantly in contact with the strip by springs, and thus, when they move in one direction they carry the strips with them. Cutters, punches, and stampers (which act as folders) are then made to act upon the hinge; the wire joint pin is then introduced, and other stampers form the knuckles by means of a semicircular groove. When the wire is cut off, a helical spring and rod push out the finished hinge from a suitable opening.

An arrangement of drills for countersinking the holes in the hinges “consists of four drills having continuous rotary motion, “ and which by the aid of a cam and lever suitably disposed may “ be raised vertically and applied for countersinking the four “ holes in the hinge.” A centre driving pinion gears with the four drill pinions.

A strip feeder for the hinge machinery consists of rollers driven by pinions and adjustable guides. The stamper for forming the knuckles may be held in position by means of an oscillating lever *which acts upon the cap of the guide, and thus enables the stamper to be easily dismantled.*

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In an apparatus for polishing the strips, an emery wheel acts on the part of the strip required to be polished, and a helical spring keeps the strip in contact with the wheel.

[Printed, 8s. 8d. Drawings.]

A.D. 1865, October 10.—N° 2613.

NICHOLLS, ARTHUR.—“Improvements in rules for measuring “ and in other instruments or articles requiring to be adjusted or “ disposed at various angles.”

The joint, hinge, connection, or fitting which forms a part of this invention, amongst other purposes, may be applied to “ shutters, telescopes, desks, doors,” and other articles.

This invention refers to various “instruments or articles requiring to be adjusted or disposed at a desired angle;” the object of the invention “is to retain such articles at the required “ position when adjusted thereat.” A middle plate, turning “ plate, bar, or piece works in a head, socket, cap, or frame. “ The turning plate is a polygonal figure, and the socket is fitted “ with a spring, so placed that it will hold the turning plate in “ any desired position to which it may be moved,” but yet allow of its position being shifted when required.

In the case of rules and other like instruments, a set screw with a milled edge may be combined with a graduated middle plate.

A rule may have studs to enable it to be easily and accurately placed in position.

[Printed, 8d. Drawing.]

A.D. 1865, November 13.—N° 2917.

WILLIAMS, WILLIAM.—(*Provisional protection only.*)—“Improvements in door springs.”

On a plate attached to the door frame “is fixed a bracket “ carrying a hook shaped knuckle; at about the middle of the “ said knuckle a case or box is jointed, the upper end of the said “ knuckle occupying a part of the interior of the said case or box. “ The axis of the joint connecting the case or box with the knuckle “ is coincident with the axis of the door hinges. The said case “ or box contains a spring made of a flat strip of steel doubled at “ a short distance from its middle. The said spring is supported “ in the said box or case by two cross pins, one lying within the “ spring at its doubled part and the other supporting the shorter

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“ arm of the spring ; the longer arm of the spring bears against
“ the inner side of the hook-shaped knuckle, the pressure of the
“ spring against the said knuckle tends to force the box or case
“ into a plane parallel to that of the plate on which the knuckle
“ is situated. In applying the spring to a door the plate carrying
“ the knuckle is fixed to the door frame, and the box or case
“ jointed thereto is fixed to the door, or the said box or case may
“ be left unconnected with the door. The spring bearing against
“ the hooked end of the knuckle is compressed when the door is
“ opened, and whenever the open door is at liberty to move the
“ compressed spring presses the box containing it against the
“ open door and tends to close the door, the spring relaxing itself
“ as the door closes.”

A modification of the above arrangement is described, in which the hook of the knuckle has a depression into which the end of the spring falls when the door is completely open, thus holding the door open until it is intentionally closed.

[Printed, 4d. No Drawings.]

1866.

A.D. 1866, April 9.—N^o 1015.

SHERMAN, SYLVESTER JUDSON. — “ Improvements in the
“ hoops of ladies’ skirts, and in the covering of steel springs for
“ the same and analogous uses.”

This invention “ relates to the use of suitable joints or hinges
“ in the hoops of skirts” “ and also to the covering or protec-
“ tion of the spring.”

The drawings represent a hinge, each part of which is cut by dies out of a suitable plate of brass. One part of the hinge is made into a loop into which the ears of the other part pass ; an extension or shoulder of the latter part prevents the spring from bending outwardly, but no obstruction is offered “ to the folding
“ or bending of the hinge inwardly towards the person.” This hinge cannot by any possibility bend upward or downward. The entire hoop is provided with three hinges, one in front, and one at each side of the skirt.

These hinges “ provide for the bending inward of the hoop
“ at the front and also at the sides of the skirt when required,

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“ and thus allow the wearer to contract her dress into very moderate dimensions.”

Other forms of hinge are represented, but that described above is preferred. One form has two loops into which separate ears pass; the ears are on a distinct metallic piece. Other hinges, in which a ring or hooks form the connecting piece or pieces, are shown.

[Printed, 8d. Drawing.]

A.D. 1866, November 7.—N^o 2893.

DEAVIN, JOHN, SUTTON, JOHN HENRY, and DEAVIN, MARTIN.—“ Improvements in the method of closing and keeping open at any distance doors and gates in lieu of using springs, straps, or other unsightly arrangements for effecting the purpose.”

In this invention, the effectual closing of doors and gates, and the keeping them open at any required distance, is accomplished “ by the use of cranks, levers, cords, pulleys, and weights;” they are arranged “ at or near the hinge edge of the door or gate (and by preference at the bottom), so that doors and gates of single or double action may be closed or kept open at any distance required.” The door is so governed that slamming is prevented.

A lever is firmly fixed to the lower part of a crank attached to the bottom of the door. The lever carries two pulleys over which pass two cords, the ends of which are fastened to the under side of the floor. The cords pass over two horizontal pulleys, then over two vertical pulleys to the actuating weight. One line ends at and is fastened to the weight, the other line has a continuation passing through an eye fixed in the said weight, which line has loops or links fixed in the end thereof to be attached to a conveniently fixed hook; the length of the cord is regulated according to the distance the door is required to be kept open.

In swing doors “ instead of having a crank fixed to the lower part of the door the lever may be connected with the centre pin of the lower hinge, and thus govern the door.”

[Printed, 8d. Drawing.]



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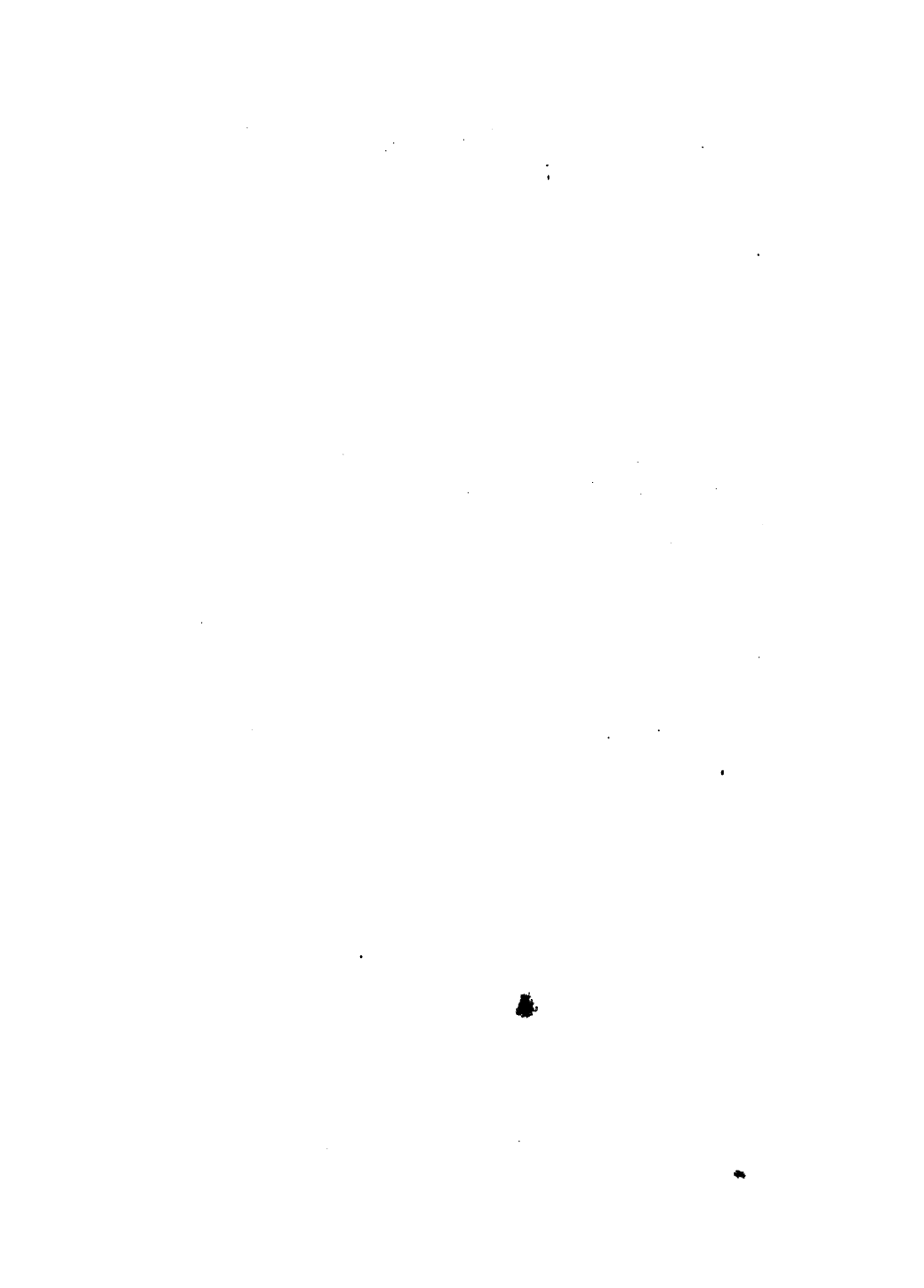
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LONDON:
Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,
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Bombay.
Madras.
N.-W. Provinces.
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Prince Edward Island.
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Tasmania.
Trinidad.
Victoria—Parliamentary
Library, Mel-
bourne.
Patent Office,
Melbourne.
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Foreign States.

Argentine Republic—Buenos Ayres.
Austria—Handels Ministerium, Vienna.
Belgium—Ministère de l'Intérieur, Brussels.
Musée de l'Industrie, Brussels.
France—Bibliothèque Nationale, Paris.
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Germany—Alsace—Société Industrielle, Mulhouse.
Bavaria—Königliche Bibliothek, Munich.
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Prussia—Königliche Polytechnische Schule, Aix-la-Chapelle.
Gewerbe-Akademie, Berlin.
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Württemberg—Bibliothek des Musterlagers, Stuttgart.
Italy—Uffizio delle Privative, Florence.
Netherlands—Harlem.
Russia—Bibliothèque Impériale, St. Petersburg.
Spain—Madrid.
Sweden—Teknologiska Institutet, Stockholm.
United States—Patent Office, Washington.
Astor Library, New York.
State Library, Albany.
Franklin Institute, Philadelphia.
Free Library, Boston.
Library Company, Philadelphia.
Free Public Library, Chicago.
Peabody Institute, Baltimore.
Historical Society, Madison, Wisconsin.
Cornell University, Ithaca, N.Y.
Mercantile Library, St. Louis.

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Alnwick (*Scientific and Mechanical
Institution*).
Alton (*Mechanics' Institution*).
Altrincham (*Altrincham and Bowdon
Literary Institution*).
Ashby-de-la-Zouch (*Mutual Improve-
ment Society*).
Ashton-under-Lyne, (*Mechanics' In-
stitution*).
Bacup (*Mechanics' Institution*).
Ballymoney (*Town Hall*).

Banbridge (*Literary and Mutual Im-
provement Society*).
Banbury (*Mechanics' Institution*).
Barnstable (*Literary and Scientific
Institution*).
Bath (*Athenæum*).
— (*Royal Literary and Scientific
Institution*).
Batley (*Mechanics' Institution*).
Battle (*Young Men's Christian Asso-
ciation*).
Belfast (*Athenæum*).
Berkhamstead, Great (*Mechanics'
Institute*).

Berkhamstead, Great (*Working Men's College*).
 Birmingham (*Bloomsbury Institution*).
 ——— (*Central Lending Library*).
 ——— (*Deritend Working Men's Association*).
 ——— (*Free Library and News Room, Gosta Green*).
 ——— (*Graham Street Institution*).
 ——— (*Gun Makers' and Inventors' Club*).
 ——— (*Law Students' Society*).
 Bodmin (*Literary Institution*).
 Bolton (*Mechanics' Institution*).
 ——— (*School of Art*).
 Bournemouth (*Library and Reading Room*).
 Bradford, Yorkshire (*Church Institution*).
 ——— (*Library and Literary Society*).
 ——— (*Mechanics' Institute*).
 Braintree (*Braintree and Bocking Literary and Mechanics' Institution*).
 Brampton, near Chesterfield (*Local Museum and Literary Institute*).
 Breage, Cornwall (*Institution*).
 Bristol (*Athenaeum*).
 ——— (*Institution*).
 ——— (*Law Library Society*).
 ——— (*Library*).
 Bromsgrove (*Literary and Mechanics' Institute*).
 Burnley (*Mechanics' Institution*).
 ——— (*Literary Institution*).
 Burslem (*Wedgwood Institution*).
 Bury St. Edmund's (*Athenaeum*).
 ——— (*Mechanics' Institution*).
 Calne (*Literary Institution*).
 Canterbury (*Working Men's Club*).
 Cardigan (*Mechanics' Institute*).
 Carharrack (*Literary Institute*).
 Carmarthen (*Literary and Scientific Institution*).
 Cheddar (*Literary Institution*).
 Cheltenham (*Literary and Philosophical Society*).
 ——— (*Permanent Library*).
 ——— (*Working Men's Club*).
 Chertsey (*Literary and Scientific Institution*).
 Chester (*City Library and Reading Room*).
 Chesterfield (*Mechanics' Institution*).
 Chichester (*Literary and Philosophical Society*).
 ——— (*Literary Society and Mechanics' Institute*).
 Chippenham (*Literary and Scientific Institution*).
 Clevedon (*Village Hall Institution for Working Men*).
 Cockermouth (*Mechanics' Institution*).

Coggeshall (*Literary and Mechanics' Institution*).
 Colchester (*Literary Institution*).
 ——— (*Young Men's Christian Association*).
 Compstall (*Athenaeum*).
 Coventry (*Free Library*).
 ——— (*Institute*).
 ——— (*School of Art*).
 Crediton (*Working Men's Club*).
 Crewe (*Mechanics' Institution*).
 Dartmouth (*Mutual Improvement Society*).
 Deal (*Deal and Walmer Institute*).
 Denton (*Denton and Haughton Mechanics' Institution*).
 Derby (*Mechanics' Institution*).
 Devonport (*Mechanics' Institution*).
 Dewsbury (*Mechanics' Institution*).
 Diss (*Reading Room and Library*).
 Doncaster (*Free Library*).
 ——— (*Great Northern Mechanics' Institute*).
 Dorchester (*County Museum and Library*).
 ——— (*Working Men's Institute*).
 Dudley (*Mechanics' Institution*).
 Dukinfield (*Village Library and Reading Room*).
 Dumbarton (*Philosophical and Literary Society*).
 Dumfries (*Mechanics' Institution*).
 Durham (*Mechanics' Institute*).
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 Ealing (*Mechanics' Institute*).
 Earlestown, Newton-le-Willows (*Mutual Improvement Society*).
 Edinburgh (*Philosophical Institution*).
 ——— (*Royal Scottish Society of Arts*).
 ——— (*Subscription Library*).
 ——— (*Watt Institution and School of Art*).
 ——— (*Working Men's Club*).
 Egham (*Literary Institute*).
 Egremont (*Mechanics' Institute*).
 Exeter (*Devon and Exeter Albert Memorial Museum, School of Science and Art, and Free Library*).
 ——— (*Devon and Exeter Institutions*).
 Farnham (*Young Men's Association*).
 Faversham (*Institute*).
 Frome (*Literary and Scientific Institution*).
 ——— (*Mechanics' Institution*).
 Gainsborough (*Literary, Scientific and Mechanics' Institute*).
 Garforth, near Leeds (*Working Men's Club*).
 Glasgow (*Athenaeum*).
 ——— (*Central Working Men's Club and Institute*).
 ——— (*Institution of Engineers in Scotland*).
 ——— (*Mechanics' Institution, Bath Street*).
 ——— (*Philosophical Society*).
 Glastonbury (*Literary Institute*).

- Godmanchester (*Working Men's Reading Room*).
 Gosport (*Gosport and Alverstoke Literary and Scientific Institution*).
 Grantham (*Public Literary Institution*).
 Gravesend (*Gravesend and Milton Library and Reading Rooms*).
 Greenwich (*Working Men's Institute*).
 Guernsey (*Mechanics' Institution and Literary Society*).
 — (*Working Men's Association*).
 Guildford (*Mechanics' Institute*).
 Hadleigh (*Young Men's Institute*).
 Halesworth (*Mechanics' Institute*).
 Halifax (*Literary and Philosophical Society*).
 — (*Mechanics' Institute*).
 — (*Working Men's College*).
 Halstead (*Literary and Mechanics' Institute*).
 Haslingdon (*Institute*).
 Hastings (*Literary and Scientific Institution*).
 — (*Mechanics' Institution*).
 Hawarden (*Literary Institution*).
 Hebden Bridge, near Todmorden (*Mechanics' Institution*).
 Helston (*Reading Room and Library*).
 Hemel Hempstead (*Mechanics' Institute*).
 Hereford (*Natural History, Philosophical, Antiquarian, and Literary Society*).
 Hertford (*Literary and Scientific Institution*).
 Heywood (*Mechanics' Institute*).
 Holbeck (*Mechanics' Institution*).
 Hollingwood (*Working Men's Club*).
 Holt, Norfolk (*Literary Society*).
 Holywell Green (*Mechanics' Institution*).
 Huddersfield (*Mechanics' Institution*).
 Hull (*Church Institute*).
 — (*Literary, Scientific, and Mechanics' Institute*).
 — (*Lyceum Library*).
 — (*Royal Institution, Albion Street*).
 — (*Young People's Institute*).
 Huntingdon (*Literary and Scientific Institution*).
 Inverness (*Working Men's Club*).
 Kendal (*Christian and Literary Institution*).
 — (*Working Men's Institute*).
 Kidderminster (*Mechanics' Institute*).
 Lancaster (*Mechanics' Institute and School of Science*).
 Lee, Kent (*Working Men's Institution*).
 Leeds (*Church Institute*).
 — (*Library*).
 — (*Mechanics' Institution and Literary Society*).
 — (*Philosophical and Literary Society*).
 — (*Working Men's Institute*).
 — (*Young Men's Christian Association*).
 Leek, Staffordshire (*Literary and Mechanics' Institution*).
 Leicester (*Law Society*).
 — (*Young Men's Christian Association*).
 Leighton Buzzard (*Working Men's Mutual Improvement Society*).
 Leith (*Mechanics' Subscription Library*).
 Lewes (*Fitzroy Memorial Library*).
 — (*Mechanics' Institute*).
 — (*School of Science and Art*).
 Lincoln (*Mechanics' Institute*).
 Liverpool (*Institute*).
 — (*Mechanics' Institute*).
 — (*Medical Institution*).
 — (*Polytechnic Society*).
 Llanelly (*Chamber of Commerce and Reading Room*).
 London (*Beaumont Institute, Mile End*).
 — (*Bedford Working Men's Institute, Spitalfields*).
 — (*Birkbeck Institution, Southampton Buildings, Chancery Lane*).
 — (*Bow Common Working Men's Club, Devon's Road, Bow Common*).
 — (*Christchurch Working Men's Club, New Street, Lark Hall Lane, Clapham*).
 — (*Clerkenwell Club, Lower Rosoman Street*).
 — (*Holloway Working Men's Club and Institute, Holloway Road*).
 — (*Literary and Scientific Institution, Walworth*).
 — (*St. James and Soho Working Men's Club, Rupert Street, Soho*).
 — (*St. Mary Charterhouse Working Men's Club, Golden Lane*).
 — (*South London Working Men's College, Blackfriars Road*).
 — (*Southwark Working Men's Club, Broadwall, Stamford Street*).
 — (*Working Men's Club, Brighton Hill*).
 — (*Working Men's Club, St. Mark's, Victoria Docks*).
 — (*Working Men's Club and Institute, Battersea*).
 — (*Working Men's Club and Institute Union, Strand*).
 — (*Working Men's College, Great Ormond Street*).
 Loughborough (*Working Men's Club and Institute*).
 Lowestoft (*Library and Reading Room*).
 Lye (*Institution*).
 Lymington (*Literary Institute*).
 Madeley, Shropshire (*Austice Memorial, Workmen's Club and Institute*).
 Maidstone (*St. Paul's Literary Institute*).
 Maldon, Essex (*Literary and Mechanics' Institute*).

Manchester (*Ancoats Branch Free Library*).
 — (*Athenæum*).
 — (*Campfield Free Lending Library*).
 — (*Cheetham Branch Library*).
 — (*Charlton and Ardwick Branch Free Library*).
 — (*Hulme Branch Free Library*).
 — (*Law Library*).
 — (*Mechanics' Institution*).
 — (*Natural History Museum, Peter Street*).
 — (*Owen's College*).
 — (*Portico Library, Mosley Street*).
 — (*Rochdale Road Branch Free Library*).
 — (*Royal Exchange Library*).
 Mansfield (*Co-operative Industrial Society*).
 — (*Mechanics, Artisans, and Apprentices' Library*).
 — (*Mechanics' Institute*).
 Marlborough (*Reading and Mutual Improvement Society*).
 Melksham (*Mutual Improvement Society*).
 Melton Mowbray (*Literary Institute*).
 Mere, near Bath (*Literary Association*).
 Merthyr-Tydfil (*South Wales Institute of Engineers*).
 Middlesbrough (*Iron and Steel Institute*).
 — (*Mechanics' Institution*).
 Middlewich (*Literary and Scientific Institution*).
 Modbury (*Mechanics' Institution*).
 Mossley (*Mechanics' Institute*).
 Needham Market (*Literary Association*).
 Newark (*Mechanics' Institute*).
 Newbury (*Literary and Scientific Institution*).
 Newcastle-upon-Tyne (*Mechanics' Institution*).
 — (*Working Men's Club*).
 New Mills, near Stockport (*Mechanics' Institute*).
 Newport, Isle of Wight (*Young Men's Society and Reading Room*).
 Northampton (*Mechanics' Institute*).
 Nottingham (*Free Library*).
 — (*Mechanics' Institution*).
 — (*Subscription Library, Bromley House*).
 Odiham (*Mechanics' Institution*).
 Oldham (*Analytic Literary Institution*).
 — (*Mechanics' Institution, Werneeth*).
 Ormskirk (*Public Library*).
 Oswestry (*Institute*).
 Over, Cheshire (*Working Men's Institute*).

Oxford (*North Oxford Working Men's Club*).
 Patricroft (*Mechanics' Institution*).
 Pembroke Dock (*Mechanics' Institute*).
 Pendleton (*Mechanics' Institution*).
 Penryn (*Working Men's Club and Reading Room*).
 Perth (*Mechanics' Library, High Street*).
 Peterborough (*Mechanics' Institution*).
 Plymouth (*Working Men's Institute*).
 Poole (*Literary and Scientific Institution*).
 — (*Mechanics' Institute*).
 Portsea (*Athenæum and Mechanics' Institution*).
 Preston (*Institution for the Diffusion of Knowledge*).
 Rawtenstall (*Mechanics' Institution*).
 Reigate (*Mechanics' Institution*).
 Retford (*Literary and Mutual Improvement Society*).
 Richmond (*Working Men's College*).
 Rotherham (*Rotherham and Masbrough Literary and Mechanics' Institute*).
 Royston (*Institute*).
 Ryde, Isle of Wight (*Literary and Scientific Institution*).
 — (*Philosophical and Scientific Society*).
 Saffron Walden (*Literary and Scientific Institution*).
 St. Just (*Institution*).
 St. Leonard's (*Mechanics' Institution*).
 Salford (*Working Men's Club*).
 Salisbury (*Literary and Scientific Institution*).
 Saltaire (*Literary Institute*).
 Selby (*Mechanics' Institute*).
 Sevenoaks (*Literary and Scientific Institution*).
 Shaftesbury (*Literary Institution*).
 Sheerness (*Literary Institute*).
 Sheffield (*Branch Free Library*).
 — (*Brightside Branch Library*).
 — (*Literary and Philosophical Society, School of Arts*).
 — (*Mechanics' Institution*).
 Shepton Mallet (*Reading and Mutual Improvement Society*).
 Sidmouth (*Mechanics' Hall*).
 Skipton, Yorkshire (*Mechanics' Institute*).
 Slough (*Mechanics' Institute*).
 Smethwick, Staffordshire (*Library, Reading Room, and Literary Institute*).
 Southampton (*Hartley Institution*).
 — (*Polytechnic Institution*).
 — (*Workmen's Hall*).
 Southport (*Athenæum*).
 South Shields (*Working Men's Institute and Club*).
 Southwell (*Literary Institution*).
 Spalding (*Mechanics' Institute*).
 — (*Christian Young Men's Association*).
 Staines (*Literary and Scientific Institution*).

Staines (*Mechanics' Institute and Reading Room*).
 Stalybridge, Cheshire (*Mechanics' Institute*).
 Stamford (*Institution*).
 Stourbridge (*Associated Institute*).
 — (*Church of England Association*).
 — (*Iron Works Reading Room and Library*).
 — (*Mechanics' Institution*).
 — (*Working Men's Institute*).
 Stratford (*Working Men's Hall*).
 Sudbury, Suffolk (*Literary and Mechanics' Institute*).
 Sunderland (*Working Men's Club*).
 Swansea (*Royal Institution of South Wales*).
 — (*Working Man's Institute*).
 Tavistock (*Mechanics' Institute*).
 — (*Public Library*).
 Thornton, near Bradford (*Mechanics' Institute*).
 Thornton Heath, Croydon (*Workmen's Club*).
 Todmorden (*Mechanics' Institution*).
 Truro (*Cornwall County Library*).
 — (*Institution*).
 — (*Royal Institution of Cornwall*).
 Tunbridge (*Literary and Scientific Institute*).
 — (*Mechanics' Institute*).
 Tunbridge Wells (*Mechanics' Institution*).
 — (*Society of Literature and Science*).
 Turlon, near Bolton (*Chapel Town Institute*).
 Tynemouth (*Free Public Library*).
 Ulverston (*Temperance Hall*).
 Uttoxeter (*Mechanics' Literary Institute*).
 Uxbridge (*Uxbridge and Hillingdon Reading and Newsroom Institute*).
 Wakefield (*Mechanics' Institute*).
 Wallingford (*Free Library and Literary Institute*).
 Walsall (*Free Library*).
 Walsham-le-Willows, Suffolk (*Institute*).
 Ware (*Institute*).
 Warminster (*Athenæum*).
 Watford (*Literary Institute*).
 Wells, Somerset (*Mechanics' Institution, Groce Lane*).
 — (*Young Men's Society*).
 Wendover (*Literary Society*).
 Whaleybridge (*Mechanics' Institute*).
 Whitby (*Institute*).
 — (*Museum*).
 — (*Subscription Library*).
 Whitehaven (*Mechanics' Institute*).
 — (*Working Men's Reading Room*).
 Whitstable (*Institute*).
 Wilton (*Literary Institute*).
 Winchester (*Mechanics' Institution*).
 Wirksworth (*Mechanics' Institution*).
 Wisbeach (*Mechanics' Institute*).
 Witham (*Literary Institution*).
 Witney (*Athenæum*).
 Wolverhampton (*Law Library*).
 — (*Library*).
 Wolverton (*Institute*).
 Woodbridge (*Literary and Mechanics Institute*).
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 — (*House of Commons*).
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 — { " " Inner Temple).
 — { " " Lincoln's Inn).
 — { " " Middle Temple).
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 — (*Odontological Society*).
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 — (*United Services Museum*).
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Newcastle-upon-Tyne (*North of England Institute of Mining Engineers*).
 Oxford (*Bodleian Library*).
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 Swindon, New (*Mechanics' Institute*).
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British Colonies and Foreign States.

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 United States—*American Academy of Arts and Sciences, Boston*.
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 — *Industrial University, Champaign, Illinois*.
 — *Mechanics' Institute, San Francisco*.
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 — *Smithsonian Institute, Washington*.
 — *Wabash College, Indiana*.
 — *Young Men's Christian Association, Scranton, Pennsylvania*.

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